

**PROCUREMENT
QUALITY ASSURANCE
TECHNICAL PROCEDURES**



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HEADQUARTERS, U.S. ARMY MATERIEL COMMAND

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1. AMCR 715-509, Procurement - Quality Assurance Technical Procedures, is published for the compliance of all concerned.

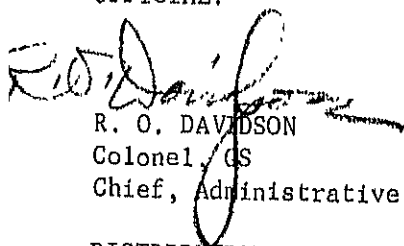
2. Suggestions or criticisms relative to the purpose, contents, use, or form of this regulation should be referred to the Commanding General, U.S. Army Materiel Command, Washington, D.C. 20315, ATTN: Director of Procurement and Production (AMCPE-SQ).

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INTRODUCTION

1. This regulation provides uniform instructions, quality assurance technical procedures and evaluation and verification records for all Army Materiel Command procurement inspection and acceptance activities.

2. Major titled paragraphs consist of a set of three digits or groups of digits.

a. The first digit is the Part Number.

b. The second digit or group of digits is the Chapter Number within the part.

c. The third group of digits, three in number, represents the Paragraph Number within the chapter or within a section. If the chapter has no sections, the first digit is "0" and the last two are the paragraph number. If the chapter is divided into sections, the first digit is the section number within the chapter and the last two are the paragraph number.

3. Page numbers for parts, chapters and sections are similarly assigned.

PART ONE
GENERAL PLANNING

CHAPTER 1
GENERAL

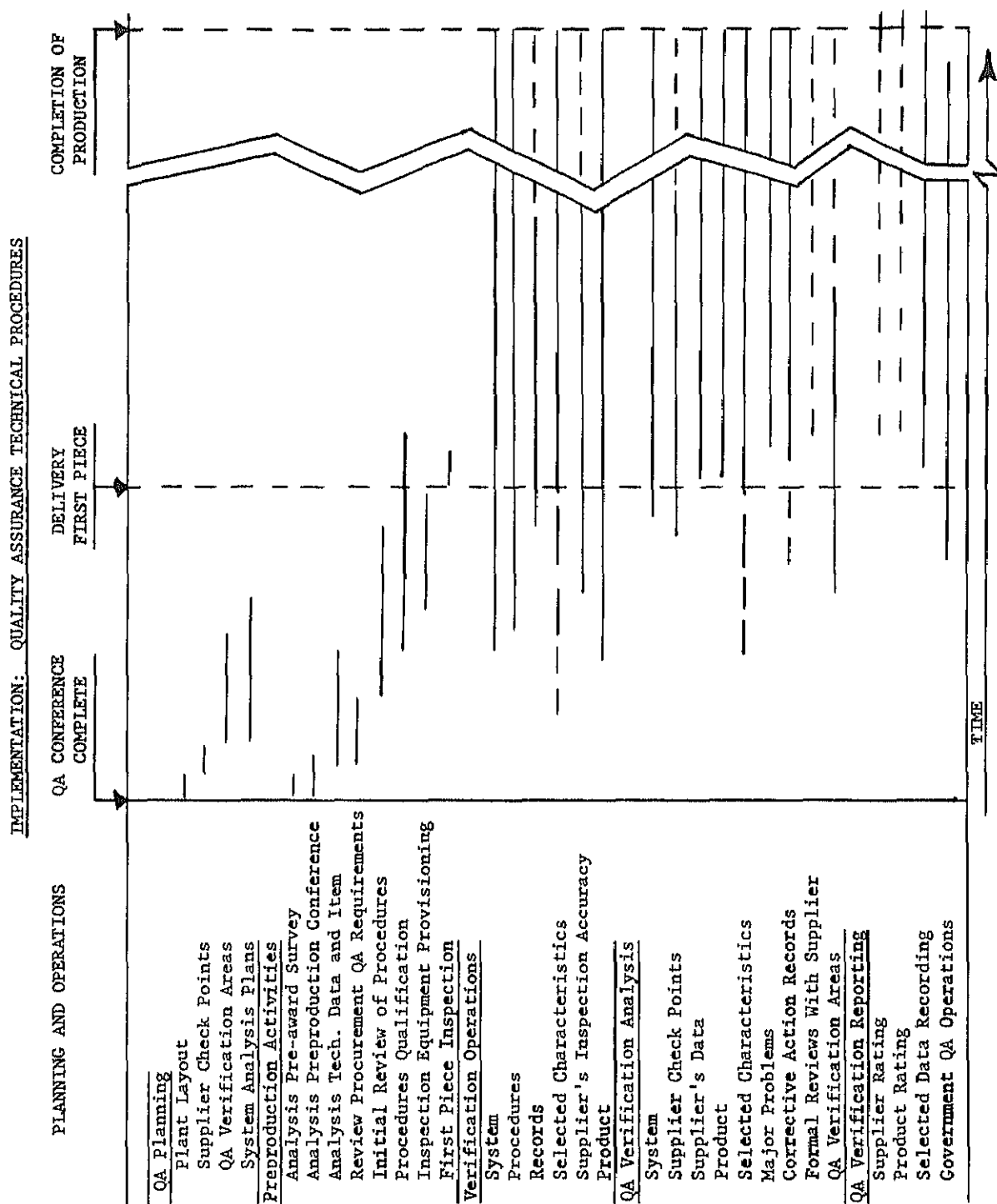
1-1-000. Scope. This regulation is mandatory for use by all procurement activities and installations within the Army Materiel Command initiating procurements or performing inspection and acceptance functions for the Army or other services under inspection interchange agreements, excluding government owned-government operated installations.

1-1-001. Purpose. a. The purpose of this regulation is to provide the inspection element with formal guides for conducting initial and continuing system and product verification to assure that all supplies conform to the procurement requirements and that a quality product is being accepted by the government.

b. This regulation provides specific methods and techniques for insuring, on a nation-wide basis, uniform, effective, efficient, and economical implementation of inspection system and quality program requirements. It requires no further implementation by the procurement districts except for number of copies and internal distribution of prescribed forms, records and reports.

1-1-002. Implementation. a. The various chapters and sections of this regulation provide for action to be taken by the inspection element and the QARep prior to and throughout production, until completion of the contract or order. Figure 1 of this chapter illustrates generally the time phase for certain actions. Solid lines indicate continuous actions, and broken lines indicate periodic actions.

b. There is certain planning to be accomplished by the QARep and other personnel of the inspection element upon receipt of a contract or order. This planning, up to and including the preproduction conference, will be as specified in AMCR 715-508, Inspection Administrative Procedures, Volume I. The quality assurance planning specified in this regulation, AMCR 715-509, and as illustrated in Figure 1 on the following page, starts immediately after the preproduction conference, or an equivalent point in time if no conference is held, and continues until complete. All planning must be completed by the time of initial presentation of material for inspection.



PART ONE
GENERAL PLANNING

CHAPTER 2
DEFINITIONS AND TERMS

1-2-000. General. a. Quality assurance requires the use of certain terms whose definitions are recognized for use in connection with this regulation.

b. In order to avoid misinterpretations or incorrect usage of terms contained in this regulation, the following order of preference shall be used for such definitions:

- (1) AMCR 715-509.
- (2) MIL-STD-109.
- (3) AMCR 715-508.
- (4) AR 320-5.
- (5) Webster's International Dictionary.

1-2-001. Definitions and terms. a. Quality assurance - Quality assurance comprises a planned and systematic pattern of all actions necessary to provide adequate confidence that the product will perform satisfactorily in service (MIL-STD-109).

b. Quality assurance element - The organizational element of a major subordinate command or of a separate installation or activity which is charged with the responsibility for organizing, planning, developing, directing, co-ordinating, and controlling the quality assurance operations for assigned materiel.

c. Inspection element - A distinct organizational element within the Army Materiel Command quality assurance system having responsibility for determining the conformance of supplies and services to prescribed requirements, and as appropriate, for officially accepting (or rejecting) supplies and services offered for the account of the government.

d. Prime inspection element - That organizational element charged with responsibility for inspecting or accepting, or both, supplies and services for the government at a prime supplier's plant and defining the inspection to be performed in inspection requisitions transmitted to a subinspection element.

e. Subinspection element - The government organizational element perform-

ing inspection or other services at a subsupplier's plant, charged with quality assurance responsibility in accordance with instructions of the prime inspection element.

f. Supplier's inspection system - The inspection performed, including record of results which, while accomplished in accordance with requirements of the procurement documents, is for the purpose of presenting only that material considered to be acceptable by the supplier. Such an inspection system will not in all cases preclude sorting operations or the production of a high percentage of unacceptable material.

g. Supplier's quality program - The complete system of assuring that supplies and services are produced in accordance with contract requirements. Such a system has as its purpose the production of material with a minimum percent being unacceptable.

h. Objective quality evidence - Any statement of fact pertaining to the quality of a product or services, based on observations, measurements or tests which can be fully verified. Evidence must be expressed in terms of specific quality requirements or characteristics. These characteristics are identified in drawings, specifications, and other documents which describe the item, process or procedure (MIL-STD-109).

i. Quality assurance representative - Inspection element personnel, e.g., a supervisor stationed at a supplier's plant with two or more subordinate personnel, an inspector with one or no subordinate personnel stationed at a supplier's plant, or an on-call inspector who services various suppliers' plants.

j. Procurement data package - A compilation of engineering documents, i.e., specifications, drawings and technical data which prescribe detailed requirements, including quality assurance provisions which must be met by the supplier.

k. General procedures - Statements of management policy with regard to the functions required to be covered in an inspection system or quality program. These procedures should prescribe the responsibility for the function and the limits within which the function will operate.

l. Detailed procedures or instructions - Specific work instructions and operating practices or procedures in support of the general procedures. They specify for each operation or process what to do, when and where to do it, what the decision rules are, and what actions are to be taken when the decisions are made.

m. Evaluation - An appraisal to determine whether or not production, inspection and quality control systems are capable of producing a quality product, data system or service, and generating evidence that supports decisions of acceptability.

n. Preproduction sample - A unit or group of units selected for preproduction

test, which is an engineering type test, conducted by or under the supervision of the responsible procuring agency in co-ordination with the developing agency, of a pre-production model, produced in accordance with the supply procurement specification and drawings using the same methods, materials and equipment as will be used during regular production, in order to verify production drawings, processes and materials prior to authorization for release to production.

o. Initial production sample - A unit or group of units selected for an initial production test, which is a test conducted by or under the supervision of the responsible procuring agency in co-ordination with the developing agency of an early item or system from the first production run. This test is for the purpose of verifying the adequacy and quality of the materiel when manufactured according to the production drawings and of the mass production process, after authorization for release to production.

p. First piece sample - An in-process or completed item subjected to the same type of inspection and testing as an initial production sample.

q. Product verification - Product verification is the operation of inspecting product to quality standards and requirements and on the basis of this information, determining whether to accept or reject the materiel.

r. On-site inspection activities - Includes all procurement inspection activities of the military departments performed at the supplier's facilities for the purpose of determining that supplies and services conform to specifications and other controlling conditions cited in the procurement documents. This operation usually results in the signing or refusal to sign an acceptance document for the supplies or services. On-site inspection activities include transient and resident operations, either at a prime or subsupplier's plant, clerical and supervisory activities assigned solely to a supplier's plant.

s. System evaluation and verification - The continuous analysis of the supplier's inspection system or quality program for adequacy, conformance to established procedures and effectiveness.

t. Rework - Operations performed on the material which are basic or normal operations to produce the product specified by the drawings, specifications, work standards or scope of work.

u. Repair - Operations outside the scope of normal operations, anticipated by product or process engineering to produce an item to meet specified requirements.

PART ONE
GENERAL PLANNING

CHAPTER 3
RESPONSIBILITIES AND CHANNELS FOR COMMUNICATION

1-3-000. General. a. The Army Materiel Command is responsible for the over-all quality assurance program. To insure that product quality requirements of the user are fulfilled they will:

- (1) Provide inspection elements with instructions to standardize methods of assuring that suppliers achieve quality requirements.
- (2) Provide quality assurance elements with instructions to standardize methods and requirements for specifying quality assurance provisions in procurement documents.

b. The chart in Figure 1 illustrates responsibilities and channels for communication between the various elements.

1-3-001. Quality assurance element. a. The quality assurance element of the major subordinate command or support installation or activity will determine which procedures of this regulation, and extent of verification actions, are to be used by the inspection element.

b. The quality assurance element will indicate, through quality assurance letters or instructions, the type of inspection service required of the inspection element for procurements containing complex or unusual requirements. The quality assurance element need not issue specific instructions for each procurement, if the various plans and techniques of this regulation are adequate for the particular procurement and are to be used by the inspection element as written. Quality assurance letters or instructions for each procurement are also unnecessary if a general instruction or special requirement is included in Part Six of this regulation and no additional instructions are necessary for the particular procurement.

c. The quality assurance element will furnish the inspection element assistance in the interpretation of quality requirements contained in the procurement documents. This assistance will include feedback of pertinent quality data, and recommendations which would improve materiel evaluation and acceptance decisions.

1-3-002. Inspection element. a. The inspection element shall be responsible for preparing an operating plan using the applicable procedures of this regulation. This plan and pertinent verification data will be made available to the quality assurance element upon request.

b. The inspection element will be responsible for co-ordinating quality assurance operations with the quality assurance element on matters pertaining to unusual quality problems or any design or suspected design deficiencies. These shall also be reported to the officer administering the contract or order, through supervisory channels.

c. The inspection element will arrange with the commodity command, through channels, for the services of quality assurance, metrology or engineering specialists which are beyond local district capability.

d. The inspection element will maintain pertinent quality data and recommend improvements to the quality assurance data contained in procurement data packages.

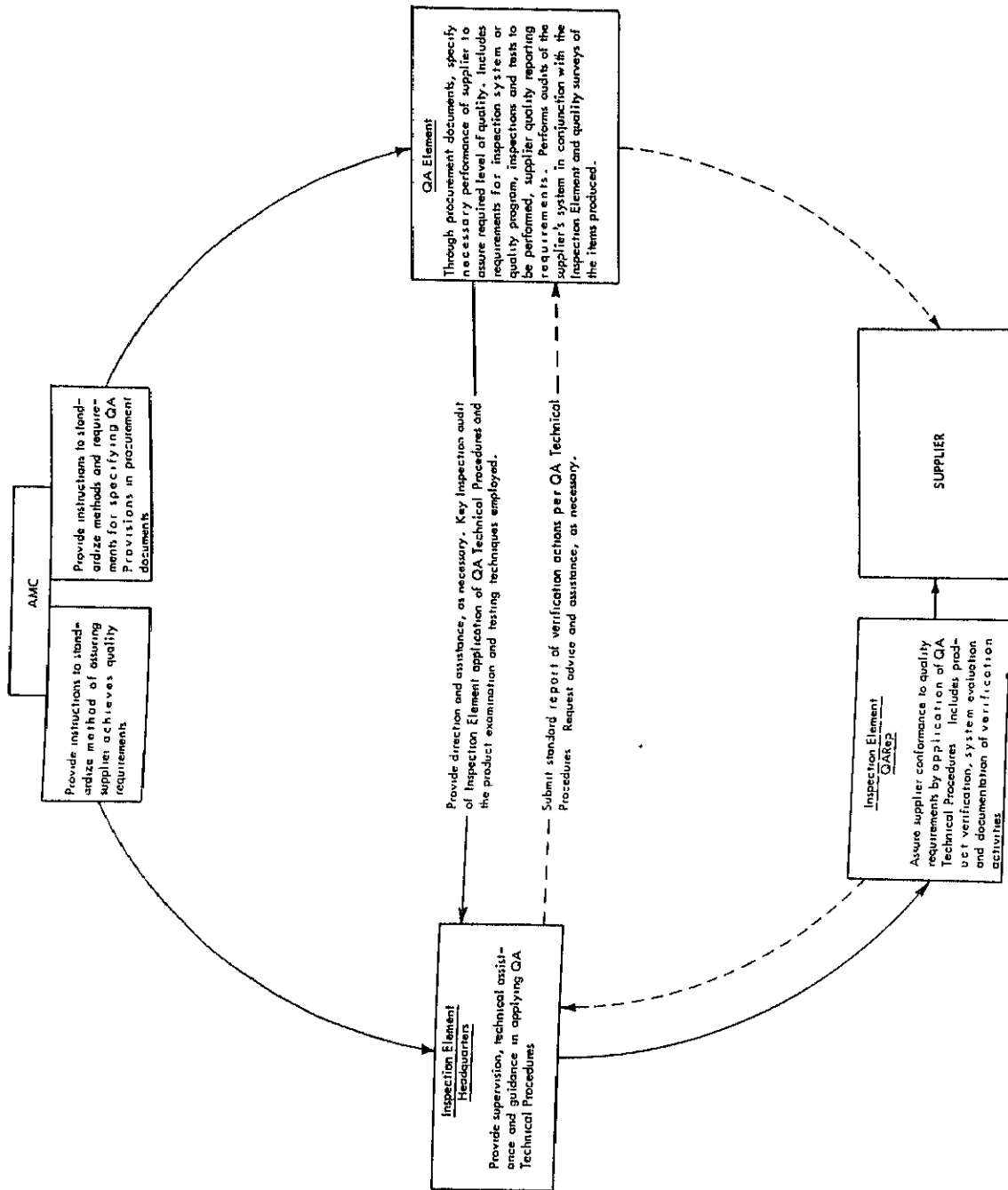


Figure 1.

PART ONE
GENERAL PLANNING

CHAPTER 4
QUALITY ASSURANCE PRINCIPLES AND CONCEPTS

1-4-000. Objectives. a. The quality assurance policy of the Army, for the control of product quality, is predicated upon the fact that:

- (1) Responsibility rests upon the supplier for controlling product quality and for offering to the inspection element for acceptance only those items or lots of items considered by the supplier to conform to procurement requirements; and
- (2) Responsibility rests upon the inspection element for determining that procurement requirements have been complied with prior to the acceptance of the product.

b. The combination of initial and continual evaluations of the supplier's system and performing product verification inspection on important characteristics will provide the QARep the media for determining item acceptability.

1-4-001. Achieving objectives. a. To achieve determinations of item acceptability, two interrelated actions are involved; system conformance evaluations and product verification inspection.

b. System conformance evaluations:

- (1) Evaluation of the supplier's inspection system or quality program shall be performed as early as possible prior to the start of production and on a scheduled and continual basis throughout the entire procurement. Evaluation shall encompass those departments whose operations are related to the production of the product and reviewing the implementation actions of the supplier's documented procedures. This operation involves the verification of procedural quality elements and those characteristics that have a significant effect on the control of quality. Supplier's documented procedures must be initially reviewed prior to production for adequacy to determine whether the description includes the full scope of the specified quality requirements. The check list guides to be used for verifying adequacy are available in this regulation or in Supply and Logistics Handbook H110. During production, the QARep shall continually perform evaluation and verification actions to confirm that the supplier is conforming to his procedures. If

the contents of the written procedures are unsatisfactory, appropriate steps for corrective action shall be taken.

- (2) The time and effort expended for system evaluation will permit a reduction in repetitive physical examination of product.
- (3) The results of evaluations shall be documented on appropriate forms contained in Part Five of this regulation. The accumulated data will be analyzed periodically and serve as contributory evidence of product acceptability.

c. Product verification inspection:

- (1) Product verification inspection provides the QARep the objective evidence necessary to determine product conformance to required quality characteristics and evaluation of the effectiveness of the supplier's system. Product verification by the inspection element will be performed independent of the supplier or if this is impractical or uneconomical, verification inspection will consist of witnessing the inspection performed by the supplier. Product verification shall be planned and scheduled in conjunction with system evaluation at each quality assurance verification area. Sufficient time must be allocated at the selected area to properly apply the procedures.
- (2) Determination of the appropriate type and amount of inspection shall begin with the end item. Normally, during a new procurement or initial stages of production, inspection will be performed on a lot-by-lot or equivalent basis with progressive reduction as provided by the inspection plan. Provisions will be made to verify critical or important characteristics at process points whenever it is found to be impractical or uneconomical at final inspection.
- (3) The inspection results will be documented, using appropriate forms contained in Part Five of this regulation.

PART ONE
GENERAL PLANNING

CHAPTER 5
INSPECTION PLANNING CONSIDERATIONS

1-5-000. Verification plan. a. The QAREp or staff member of the inspection element shall plan, develop and implement the quality assurance undertaking in accordance with the procedures described herein to insure that the supplier fulfills his contractual obligations. The verification plan shall include specific guides for on-site operations, used in conjunction with this regulation, which will cover the supplier's applicable operations. The preparation of the plan must be initiated immediately after the preproduction conference and parallel with the development and acceptance of the supplier's procedures. The plan shall account for verifying all applicable methods, techniques and processes employed by the supplier in controlling quality, including product inspection. These actions shall be arranged into quality assurance verification areas which will allow for uniform verification inspection for each assignment and over-all operation.

b. The verification plan must be available and approved when the first formal inspection task is performed and maintained in a current status throughout the procurement. The verification plan shall not contain detailed procedures or instructions readily available in existing military specifications, military standards, this regulation, or the procurement documents. Publications containing information required for the execution of an event will not be duplicated, but indicated by a direct reference to the source document.

1-5-001. Pre-award survey and preproduction conference information. a. The QAREp shall analyze the quality assurance portion of pre-award survey results relative to adequate inspection facilities and capabilities to comply with the quality assurance provisions in the procurement documents.

b. The quality assurance portion of the results of the preproduction conference, held as specified in AMCR 715-508, Volume I, will be reviewed in order to note any particular problems, to ascertain the extent of the quality assurance requirements involving the supplier and the government and assistance or co-ordination required of the quality assurance element.

1-5-002. Procurement data review. The QAREp shall assure that review of the procurement documents for completeness, legibility, clarity and accuracy of technical requirements, and for quality requirements relating to inspection and acceptance actions has been made. If technical requirements are omitted or inadequate, exemptions or changes are deemed desirable, appropriate action shall be initiated, through channels.

1-5-003. Letters of instruction. The quality assurance element will, in certain instances, furnish the inspection element with instructions directing the use of specific plans of this regulation and the degree of application of system evaluation and product verification. Compliance with these instructions is mandatory, unless specific approval to deviate is received from the quality assurance element or Army Materiel Command, Procurement and Production Directorate, Procurement Service Division, Quality Control Branch (AMCPP-SQ).

1-5-004. System evaluation and verification. a. Planning for and development of the government's formal quality assurance operations shall include the following considerations:

- (1) Flow charts of supplier's manufacturing operations.
- (2) Procedures.
- (3) Records.
- (4) Accuracy.
- (5) Inspection equipment.
- (6) Subsupplier operations.
- (7) Levels of verification.
- (8) Procurement data package.

b. Supplier's flow charts or plant layout formats represent a series of production operations, broken down into various locations which identify the construction steps of the end item. The QAREp will utilize these formats in determining which locations are essential in performing conformance evaluations and product verification inspection. In the absence of such formats, the supplier's entire in-house operations shall be surveyed in order to select the desired quality assurance verification areas.

c. A review of the various procurement documents determines whether documented procedures are required for an inspection system or quality program and operations or processes. When procedures are specified, the documented references shall consist of pertinent and accurate information describing those operations and actions employed by the supplier. In some instances documented procedures must be approved by the cognizant commodity command.

d. A review of the supplier's inspection and test records is a part of scheduled

evaluations for evidence of effective record control. The technique for evaluating the supplier's inspection and test records are provided for in this regulation.

- (1) The type of records to be evaluated are those recording the results of an act of inspection performed or a process in compliance with contractual obligations. These records reveal quality decisions in product examinations and tests, special processes, inspection equipment control, errors in sampling techniques, repetitive defects, and also serve as an indicator of validating the efficiency of the supplier's inspectors in maintaining the records.
- (2) Records information, properly assembled and analyzed, is also the basis for determining appropriate corrective action for quality problems.

e. Accuracy verification, used as a supplementary action with respect to independent product inspections, estimates effectiveness of supplier's inspectors. Effectiveness of the supplier's inspection is based on how well he judges the product and packaging of the product as being defective or not defective.

f. Inspection equipment verification:

- (1) Equipment used by the supplier to verify product quality characteristics shall be subjected to periodic evaluations. Supplier's inspection equipment includes calibration standards used by the supplier to maintain and calibrate his final inspection equipment. To accomplish this evaluation, detailed procedures provided in this regulation shall be used to perform systematic and uniform verification.
- (2) The original evaluation shall be performed by metrology personnel as a staff service to the QAREp whether or not the QAREp has the capability to perform the evaluation.
- (3) Subsequent periodic evaluations are the responsibility of the QAREp. They will be performed by the QAREp if on-site capability exists or by metrology personnel at the request of the QAREp if on-site capability does not exist.

g. Subsupplier evaluation:

- (1) Subsuppliers are responsible for complying with applicable inspection and test requirements included or referenced in purchase orders or subcontracts. It is incumbent upon the subsuppliers to utilize approved sources specified on qualified products lists, and by the subcontract or purchase order.

- (2) The QAREp shall evaluate supplier's control over his vendors by verifying that the subcontract or order contains a clear description of the item, inspection and test requirements, approved sources of material, statements of findings, required samples and government inspection, if required. Verification shall also be performed on incoming material and accompanying documentation, as necessary, to confirm that sub-suppliers are producing as required.

h. Initial level of verification:

- (1) The QAREp, on the initial verification action, shall determine whether the prescheduled verification effort applied to a particular area is optimum, and assure that all supplier's inspection decisions have been selected for verification. To the extent applicable, the QAREp shall be alert to making the necessary changes to his quality assurance plan, which will realistically cover the supplier's over-all operations for the balance of the procurement.
- (2) In undertaking the initial check, the QAREp shall utilize all applicable standards and special instructions to make certain that any adjustment to the predetermined scheduled actions are valid.

1-5-005. Product verification. a. Product verification shall be made to determine the conformance of quality characteristics to requirements. Direct product inspection shall generally be performed, but when independent product verification inspection by the QAREp is impracticable or uneconomical, witnessing of the supplier's performance of inspection is permissible.

b. At the start and during early stages of production, the QAREp shall perform product verification inspection by using the normal level of inspection. If no inspection provisions are specified, the QAREp shall select the applicable procedure in this regulation appropriate to the initial level of product verification inspection. The principle consideration by the QAREp is to verify as many characteristics as possible during the initial production period which will serve as a basis for determining the possibility of early progression to the two phases of reduced inspection.

c. Inspection equipment requirements:

- (1) Inspection equipment requirements for particular quality characteristics are frequently specified in the special provisions of the procurement documents, section 4 of the specification, inspection equipment lists, SQAP's, etc. The quality assurance element instructions can also prescribe certain control tests to be conducted, utilizing special test equipment.

- (2) Suppliers are required to have available or make arrangements for use of suitable inspection equipment for all quality characteristics specified on drawings, specifications or other procurement documents.

d. Verification recording:

- (1) Quality data obtained from verification inspection activities shall be recorded on the forms prescribed in this regulation.
- (2) The detailed instructions referenced within the applicable procedure of this regulation provides for the recording of all system conformances and product verification actions necessary for data review and analysis. The recording of nonconformances observed within the supplier's system are also provided for in this regulation.

e. Decision limits for adjusting product verification:

- (1) The amount of product verification inspection performed shall be subject to adjustment throughout production. The criteria for adjusting inspection shall be in accordance with the history of product quality, as revealed by previous verifications, the procurement documents and the applicable product verification procedure in this regulation.
- (2) The QAREp shall perform less than normal inspection at any verification area covering a group of items or a particular item, as permitted by the quality assurance technique in Part Three that is being employed, where there are no unresolved deficiencies existing in the supplier's system of control for the item considered for reduced inspection. The amount of product verification inspection performed shall be consistent with the level of protection necessary to insure acceptable quality, also on-site conditions are such that changing inspection levels is desirable. The QAREp shall progress to the two phases of reduced inspection permitted by this regulation unless specifically prohibited by quality assurance element letters or instructions or special requirements in Part Six of this regulation.

1-5-006. Special test requirements. a. The qualification of certain items requires special examinations and tests to be performed on each new product, each new production source, preproduction or first production samples, and engineering changes that affect performance. The QAREp shall review the special provisions of the procurement documents to determine if special samples are a requirement. The tests will normally be more comprehensive than production run acceptance tests in order to determine supplier's fulfillment of all quality performance requirements. Therefore, whenever special test requirements are specified, the QAREp shall obtain and co-ordinate any special instructions, through channels, with the quality

assurance element of the commodity command.

b. The supplier's test procedures shall be carefully analyzed to determine whether the procedures contain provisions for assuring the fulfillment of all special test requirements, generation of test data and correcting unsatisfactory conditions. Subsequently, the QARep shall provide in his plan of inspection, the verification of the supplier's actions in accomplishing all special test parameters specified in the procurement documents. The quality assurance element, in some instances, will delegate to the inspection element, through appropriate channels, all or portions of the responsibility for acceptance of the test procedures and the items tested, including the submission of formal reports of test results or periodic reports covering interval testing. The QARep will, unless otherwise directed, physically perform the on-site test or witness the actual performance of the final test conducted by the supplier. Where on-site facilities are not available and testing is subcontracted, the QARep shall assure that the supplier identify who performs the test and furnish a statement of findings with the tested product when presented for acceptance.

c. Preproduction tests:

- (1) Plans shall be made to verify preproduction quality requirements to be performed in accordance with the terms of the procurement documents and quality assurance instructions. The responsibility for any preproduction examinations or tests rests with the quality assurance element. However, the actual performance of the inspection can be delegated to the on-site inspection element personnel.
- (2) When requirements for preproduction samples are determined to be a prerequisite for qualifying the supplier, the QARep shall plan to perform verification inspection to ascertain that the supplier's product conforms to quality requirements of the procurement documents.

d. Initial production tests:

- (1) Plans shall be made to subject initial production items to a comprehensive examination and testing during the beginning of regular production which includes first piece inspection on items after change in process set-up and reruns on first piece inspection. Initial production testing shall be employed to ascertain whether the specified quality requirements contained in the procurement documents are realistic and that each requirement can be supported by an inspection procedure. The QARep shall assure that all operations performed by the supplier are complete and all applicable operations have been accomplished in accordance with approved procedures. Testing of initial production items indicates to the government that the supplier's future production efforts

will yield items conforming to the quality requirements of the procurement documents.

- (2) At the start of production the QARep shall program the review of important quality characteristics in accordance with the acceptance plan or applicable product verification procedure in this regulation.

e. Proof acceptance tests:

- (1) Proof acceptance testing provides the government quality assurance for those characteristics which involve performance type requirements. The actual proof testing will usually be conducted by government testing activities under various field or laboratory conditions or when specified, will be conducted by the supplier. The quality assurance element will make known in the procurement documents or instructions, the degree and frequency of preliminary or final proof testing required.
- (2) If the supplier utilizes outside laboratories or test facilities for proof testing, the inspection element shall request the supplier to obtain appropriate statement of findings from his subsupplier to substantiate that all required tests have been conducted. The inspection element shall alert the quality assurance element to provide the opportunity to schedule attendance for witnessing the test.
- (3) When a shipment, lot or batch is proof tested, the quality assurance element will initiate a report to the responsible inspection element and will request an investigation and corrective action for any deficiencies observed. The inspection element shall plan to co-ordinate quality assurance operations with the supplier for precluding deficiencies.

f. Comparison tests:

- (1) Comparison testing is performed on items that have been accepted by the government at periodic times throughout production, as specified by the quality assurance element. The tests are usually performed at a government laboratory or proving ground facility. The tests are used to confirm continued compliance of production items with applicable specification requirements relative to interchangeability, functionality and design adequacy status of the product. The tests are conducted for the purpose of comparing the qualitative conformance of various materials, items and components used in the production of the end item. Occasionally, the supplier's facilities are utilized when such facilities are determined adequate for verifying requirements of the item specification.

- (2) The QAREp shall plan to assure that no attempt is made by the supplier to specially produce or inspect the specimen prior to delivery for inspection comparison testing. The QAREp is also responsible for assuring that all contractually required examinations and tests have been accomplished prior to submission for comparison testing. The quality assurance element is responsible for the initial preparation of test requirements, selection of test site, and the actual testing or witnessing of the specimens.
- (3) Test results which indicate a deterioration in design, malfunction of performance characteristics or disclose any manufacturing deficiencies since earlier acceptance action will be reported by the quality assurance element, through channels, to the responsible source for appropriate action.

1-5-007. Data analysis. a. Data generated at producing facilities are primarily intended to disclose the efficiency of the supplier's control of quality. Data collected from system evaluation and product verification actions shall be periodically and systematically analyzed. The results of analysis will be used to guide quality decisions and action in problem areas.

b. The QAREp shall plan to follow the procedure covering the analysis of supplier and government operations prescribed in the quality assurance technique in use, including the forms and preparation instructions. Supplier analysis of quality data will not be duplicated unless his analysis is proven undependable. The utility of data analysis depends upon the timely manner in which corrective action is requested of the supplier and the action taken on the reported deficiency.

c. The QAREp shall plan for analysis of on-site data and feedback received from field services pertaining to processing, performance, and material condition of the item. The data shall be carefully reviewed and analyzed before a course of action is established with the supplier and adjustment of verification actions. Analysis of quality data shall precede changes in sample sizes, degree and frequency of inspection, acceptable quality levels, classification of characteristics, manpower efforts at quality assurance verification areas and other facets of quality assurance operations.

d. Plans shall be formulated for the QAREp to perform follow-up action on unsatisfactory conditions, based upon the seriousness of the deficiencies and repetitiveness. Since reports of unsatisfactory conditions are accounts or statements of facts, the QAREp shall judiciously evaluate the data to determine the appropriate course of action and need for adjusting prescheduled verification actions.

e. The QAREp shall provide for re-evaluation of the verification schedule at each quality assurance verification area and adjust his efforts, as necessary,

throughout the entire production run. When a repeat evaluation is performed at a quality assurance verification area, the QARep shall be alert for any procedural or product inspection changes the supplier has introduced into his operations, since the previous evaluation, which would necessitate adjustment action. The QARep shall establish a system for periodic review of summarized data accumulated from scheduled quality assurance verification actions to determine other possible adjustments in the frequency of verification actions. The adjustments may involve increased effort, conservation or elimination of effort.

1-5-008. Type and frequency of reports required. a. A major factor of a quality assurance program is effective and timely reports. The type of reports required of the QARep fall into two categories:

- (1) Special reports with specified distribution, e.g., current status interim progress reports of preproduction sample inspection or special tests performed on-site or at a commercial testing laboratory, etc.
- (2) Summarized (or individual) reports on the results of system or product verification actions.

b. The frequent of these reports shall be as specified by inspection element headquarters or quality assurance elements.

1-5-009. Manpower requirements. a. The inspection element shall plan for the number and type of inspection personnel required for conducting required quality assurance verification of the supplier's inspection system and the product to be produced. Determination of the personnel required shall be started during the preproduction period and include the review of procurement documents for occupational specialty requirements, supplier's proposed on-site inspection operations and rate of production.

b. This review will provide information regarding the need for engaging special technical assistance from the inspection element headquarters and the responsible quality assurance element. However, such assistance is recognized as a service to the QARep who retains management responsibility of the on-site quality assurance program.

PART ONE
GENERAL PLANNING

CHAPTER 6
QUALITY ASSURANCE PLANS

1-6-000. General. a. The quality assurance plans contained in Part Two and the supporting techniques and instructions contained in Parts Three and Four shall be used by inspection elements. This will be accomplished as specified without locally implementing supplementary or additional documentation, with the exception of local instructions concerning number of copies and distribution to be made of forms, records and reports required by this regulation.

b. The quality assurance plans are designed and intended to direct the methods and procedures to be used by the QAREp to measure the effectiveness of the supplier's control of quality and to perform verification inspection in order to make accurate acceptance decisions.

c. Plans and supporting verification procedures cover general procurement situations which support the specified quality requirements stipulated in the procurement document. Since there is no clear cut definition which would identify a plan to a particular product, due to the various factors involved in various procurements, the QAREp shall review each procurement document to determine whether a documented inspection system or quality program is required of the supplier. The plans contained herein are designed to contain a minimum of complex requirements and a maximum of similar procedures, so that requirements for training, regardless of assignment, will be at a minimum.

d. The quality assurance element is responsible for selecting and designating the plan to be used for each procurement or production order issued. The quality assurance element will issue instructions to the inspection element regarding the application and degree of application of procedures or instructions if limitations as to use of certain procedures is required. If no variations are specified, the plans and procedures will be used as specified. Some specifications, applicable to portions of the procurement other than the item specification or general specification, may be included in a procurement document with requirements for a written inspection procedure to be furnished by the supplier. Examples of this type of specification are packaging specifications, special process specifications, etc., which would require the selection of a modified verification plan.

e. The QAREp, from previous experience with the supplier or by pre-award or preproduction investigations, shall determine the extent of inspection system verification actions at the prime or subsupplier's facilities. The extent of verification

shall be based upon the supplier's experience, commercial or proprietary design, quality history and unsatisfactory reports.

f. The prime inspection element shall co-ordinate with the prime supplier in determining if a formal plan or written procedure is required of a subsupplier. This determination shall be specified by the prime supplier in his purchase or work order. The prime inspection element shall also determine the need for requesting government services at the subsupplier's plant.

1-6-001. Types of plans. a. The following plans, as prescribed, will be used by the inspection element for determining supplier's conformance to requirements:

- (1) Plan 1, Inspection System Procedures, is to be used when inspection system requirements are specified in the contract, e.g., MIL-I-45208. An inspection system can also be specified by inclusion of a detailed item specification which references MIL-I-45208, a similar document or specific requirements in Section 2, Applicable Documents, or Section 4, Quality Assurance Provisions. This plan establishes the minimum criteria for guiding the QARep's action to evaluate the supplier's inspection system and the subsequent implementation of the inspection procedures.
- (2) Plan 2, Quality Program Procedures, is to be used when quality control system requirements are specified in the contract which references MIL-Q-9858, or similar documents or instructions. This plan contains procedures for evaluating supplier's documented procedures. The conformance evaluation will involve the verification of all elements contained in section 3 of MIL-Q-9858 or restricted to that portion of MIL-Q-9858 which is applicable to the product being procured.
- (3) Plan 3, Short Term Production Procedures, is to be used for contracts, purchase orders or work orders not requiring a documented system for control of quality. These types of procurement are as follows:
 - (a) Short duration of the contract.
 - (b) Intermittent production, involving small quantities.
 - (c) Small purchases.
 - (d) Supplier's purchase order contains simple, or is devoid of, quality requirements and it is determined that government inspection is required at the subsupplier's plant.

(4) Plan 4, Long Term Production Procedures:

- (a) This plan will be used for contracts, purchase orders or work orders not requiring a formal documented system by the supplier for control of quality. However, the contract or order does require the supplier to provide and maintain an inspection system acceptable to the government, e.g., paragraph 5, Standard Form 32, This plan is primarily for contracts or orders for items of commercial or proprietary design when the production period is of significant time duration.
- (b) This plan is also for use when a supplier continues to have short term production contracts or orders over a period of time, for the same or similar items that collectively amounts to long term production. A guide in making this determination will be ten lots of the same or similar items submitted for acceptance in a three month period, and it is expected that this rate of lot presentation will continue. The determination will be without regard to the number of contracts or orders.

(5) Plan 5, Research and Development Product Procedures, is to be used at supplier's facilities on contracts for research and development when fabrication or manufacture of components or assemblies is required and when the cognizant authority has delegated certain responsibilities to the inspection element. This plan is a supplementary plan to a required inspection system or quality program as well as guidance criteria for product delivered under a research and development procurement. The principle task of the QAREp is to provide formal reports to confirm supplier's conformance to procurement requirements. The QAREp shall perform all quality assurance actions without interference with the supplier's work efforts. When an item is produced for testing and concurrent drawings and specifications are developed, the end item and components of the end item will be inspected to determine that the drawings and specifications exactly represent the item tested. This will be accomplished to assure that the item tested can be exactly reproduced from the drawings and specifications.

(6) Plan 6, Prime - Subinspection Element Actions, is a supplementary plan and is to be used when quality assurance actions are required of an inspection element at a subsupplier's plant. It is for use in conjunction with other plans in this regulation and provides the necessary relationship between prime and subinspection elements for quality assurance actions.

(7) Plan 7, Calibration System Evaluation Procedures, is a supplementary

plan and is to be used when MIL-C-45662, Calibration of Standards, or other requirement for a calibration system, is a part of the contract or order. It is for use in conjunction with other plans in this regulation. The implementation of this plan will be in direct relation with implementation of system evaluation under the primary plan (Plan 1, Plan 2, etc.) to avoid duplication of effort.

b. The quality assurance element may provide guidance, place restrictions on the use of, or require additional quality assurance actions, in the implementation of the above plans. This will be accomplished on an individual procurement basis, by a quality assurance letter or instruction, or included as a special requirement for the class of item or materiel in Part Six of this regulation.

PART ONE
GENERAL PLANNING

CHAPTER 7
ASSISTANCE TO SUPPLIER IN ESTABLISHING HIS QUALITY SYSTEM

1-7-000. General. a. Assistance to suppliers for control of quality shall be given when it is determined that such assistance will be in the best interest of the government.

b. The degree of this assistance shall be predicated upon the requirements contained in the quality assurance provisions of the item specification or other procurement documents.

1-7-001. Inspection element efforts. a. The inspection element shall encourage the supplier to develop a quality system that would be systematic and effective in controlling the quality of his product. In conjunction with this effort, the inspection element shall also inform the supplier of the advantages of documenting his plan in keeping with sound management of his actual operations.

b. Assistance given to suppliers for the preparation of written procedures will also be found beneficial to the QARep for identifying the type of action that will be subjected to verification inspections. Although assistance will vary from supplier to supplier, the QARep shall promote supplier use of documented plans of inspection to reduce the risk of producing and submitting unsatisfactory product.

c. During production, the QARep shall render the supplier counsel and assistance in interpreting and clarifying the quality requirements of the procurement documents.

d. The QARep is responsible for furnishing technical assistance to the supplier, utilizing the services of metrology personnel, as necessary. The technical assistance to be given is generally in the following two areas:

- (1) Establishing satisfactory inspection facilities and calibration procedures.
- (2) Analysis and interpretation of government inspection equipment and calibration system requirements.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 1
PLAN 1 — INSPECTION SYSTEM PROCEDURES

Section 1. GENERAL

2-1-100. Scope. a. This chapter prescribes the technical quality assurance actions required by personnel of inspection elements where a documented inspection system is required of a supplier. Inspection system requirements will be specified in contracts, purchase orders or work orders by reference to MIL-1-45208, Inspection System Requirements; NASA Quality Publication NPC 200-3, Inspection System Provisions for Suppliers of Space Materials, Parts, Components, and Services; a detailed item specification; a class of items specification; or by other means in the procurement documents.

b. For each procurement, the procurement documents shall be reviewed in detail and all applicable portions of this plan shall be followed. Those portions of the plan which have been modified or a specific application specified on an individual procurement basis by the responsible procurement activity will be substituted. Such deviations from the established plan shall be specifically specified in writing when the procurement documents are furnished the QAREp or included as a special requirement by the procuring activity in Part Six of this regulation.

2-1-101. Inspection planning. a. The development of the government verification plan must be done concurrently with the development of general and detailed procedures or instructions by the supplier (par. 2-1-200 a.). This concurrent development is necessary so that the verification plan will be compatible with the supplier's methods, processes, inspection stations, etc.

b. The verification plan must be complete and approved by the QAREp's immediate supervisor, or higher echelons, no later than the time the initial production sample or first piece is ready for inspection.

2-1-102. System evaluation and product verification schedules. a. System evaluation and product verification inspection will be reduced from initial frequency when the following requirements are satisfied:

- (1) Data indicates adequate control of quality by the supplier.
- (2) Supplier's corrective action is effective in precluding recurrence of unsatisfactory conditions.

b. System evaluation review and positive action to require the supplier to take corrective action will be intensified from initial efforts when any one or all of the following conditions occur:

- (1) Data indicates inadequate control of quality by the supplier.
- (2) It is necessary for the QAREp to tighten inspection.
- (3) Supplier's corrective action is ineffective in precluding recurrence of unsatisfactory conditions.

c. The QAREp will schedule unannounced evaluations covering each area, function or operation of the supplier's system at the time of manufacture or receipt of first items, but no later than immediately after initial production or first piece inspection of the end item. Scheduling will be a continual function throughout production with increased effort when there is evidence of, or it is suspected that the supplier is not conforming to his system. Likewise, efforts shall be decreased when the supplier is conforming and the system is effective.

- (1) The schedule for system evaluation of an area, function or operation shall be adjusted as indicated by results of other evaluations and verifications conducted. For example, during product verification an unusual number of defective items were found which were caused by a breakdown in the control of measuring equipment.
- (2) Unannounced evaluations, covering each area, function or operation of the supplier's system, must be made at least every 90 days. However, the effort in this area must be continual and trouble spots evaluated as frequently as necessary until effective corrective action is taken.

d. The QAREp will perform product verification inspection in accordance with the verification plan. For items of a complex nature, the QAREp will perform in-process product verification inspection only when quality of the item cannot be determined by verification inspection of the completed item.

2-1-103. Relationship of QAREps with headquarters staff and commodity command specialists. a. The QAREp will arrange for assistance of inspection element specialists, such as quality assurance, packaging, special processes, metrology, etc., as required.

b. The QAREp will make available his system and product verification plan for review by service segments of inspection element headquarters, and upon request, the quality assurance element.

c. The inspection element headquarters will assist in the initial evaluation of new suppliers and perform subsequent unannounced evaluations at least every six months. These evaluations will be in addition to evaluations conducted by the QAREp; however, will be performed as an assistance to the QAREp in assuring that the supplier's system is effective and that the QAREp is adequately performing evaluations.

d. The QAREp will report any design or suspected design deficiencies encountered to the officer administering the contract or order and the quality assurance element, through supervisory channels.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 1
PLAN 1 — INSPECTION SYSTEM PROCEDURES

Section II. SUPPLIER OBLIGATIONS

2-1-200. General system. a. The supplier must document his inspection system as early as possible, at least immediately following the preproduction conference or equivalent point in time if no conference is held.

b. The supplier's documented system will include general procedures, supported by detailed procedures or instructions for each station, area, function or operation.

c. When MIL-C-45662, Calibration System Requirements, is a requirement, the supplier's documented calibration system will include necessary procedures to comply with the specification.

2-1-201. General procedures. a. General procedures shall be required for each function required to be performed by the particular procurement document.

b. The analysis of the general procedures shall be based upon contract requirements, including quality assurance provisions of the specifications.

2-1-202. Detailed procedures or instructions. a. Detailed procedures or instructions shall be available to cover each supplier's station, area, function or operation.

b. The detailed procedures or instructions shall be based upon contract requirements, including quality assurance provisions, drawings, specifications, SQAP's, SIP's or definitive inspection instructions listing characteristics or possible defects. The supplier's procedures which differ from those specified in the technical requirements will be considered adequate when they provide, as a minimum, quality assurance equivalent to that required by the technical requirements. In case of disagreement, the inspection procedures shall strictly adhere to the technical requirements.

c. The supplier will be permitted to submit repair procedures for deficiencies of a recurring nature, cause for which is inherent in the process or operation, and the process or operation cannot be improved.

- (1) Repair procedures are operations outside the scope of normal operations to produce an item to meet specified requirements. Operations within the classification are represented by the following examples:

- (a) An undersize shaft plated to bring it up to specified diameter.
 - (b) An oversize hole plugged and redrilled to specified size.
 - (c) Porosity in a casting which is ground out then refilled by welding.
 - (d) A defective component of an assembly welded, brazed, soldered, riveted, bolted or otherwise altered to correct a deficiency.
 - (e) An item unsatisfactorily preserved which is furnished additional and different preservative, wrapping or protection.
 - (f) A substitute operation or process in lieu of repetition of the required operation or process.
- (2) Repair procedures shall be in writing and submitted to the QARep for transmittal to the quality assurance element. As a minimum, the proposed procedure shall include the following items, as applicable:
- (a) Complete description of the proposed method of repair.
 - (b) Identification of raw materials to be used.
 - (c) Identification of any components or items to be added to the material, which are not specified in the technical procurement documents.
 - (d) Limits of deficiencies to be repaired by number, size, volume, etc., as applicable.
 - (e) Estimated number of items or quantity of product to be repaired.
- (3) Repair procedures will remain valid and acceptable for use throughout the life of the contract or order unless otherwise stipulated. Resubmission of copies of the same repair procedure for approval for use on subsequent contracts or orders is not required. However, approval for use of a previously approved repair procedure shall be requested, approved, and made a matter of record with each contract or order for which it is to be used.

2-1-203. Operations and plant layout. a. The supplier shall be required to:

- (1) Assure that his processes, procedures and written descriptions comply with requirements.
- (2) Assure that his procedures and instructions are adequately implemented

by his personnel.

- (3) Assure that his subsuppliers are fully qualified to operate and maintain the processes and procedures.
- (4) Require his subsuppliers to furnish objective evidence of compliance with procurement requirements and quality of the product.
- (5) Conduct periodic verification of evidence submitted by subsuppliers.
- (6) Affix a signature of an authorized official to any documents furnished by subsuppliers to certify approval and authenticity.
- (7) Furnish all pertinent information to the QARep for review.

b. A plant layout or flow chart, indicating the areas, inspection stations and operations will be obtained from the supplier.

2-1-204. Subsupplier operations. The prime supplier is responsible for controlling the quality of the materiel, including preservation and packaging, supplied by the subsupplier. If the subsupplier's operations are extensive, the prime supplier will require that the subsupplier have a documented system. The prime supplier is responsible for furnishing an acceptable description of the subsupplier's system. The prime supplier shall evaluate the subsupplier's system to verify compliance and to perform sufficient product inspection to verify the subsupplier's findings.

2-1-205. Corrective action. a. The supplier shall take prompt action to correct assignable conditions which have resulted or could result in submission to the government, supplies and services which do not conform to requirements.

b. If prompt corrective action is not taken to correct unsatisfactory conditions, the QARep shall advise the officer administering the contract or order, through appropriate channels.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 1
PLAN 1 — INSPECTION SYSTEM PROCEDURES

Section III. GOVERNMENT SYSTEM PLANNING

2-1-300. Initial system evaluation. a. The QAREp shall conduct adequacy evaluations of the supplier's general and detailed procedures or instructions as soon as possible in order that all inadequacies shall be resolved prior to the initial presentation of product for acceptance.

b. The general procedures shall be evaluated as soon after the preproduction conference as possible.

c. The detailed procedures or instructions will be evaluated as soon as they are developed by the supplier for use.

2-1-301. Subsupplier activities. a. The QAREp, at the supplier's plant, shall review the applicable procurement documents and referenced data to determine the need for and extent of inspection or services to be performed by a QAREp at a subsupplier's facility. His decision will be made in accordance with AMCR 715-508, Volume I.

b. When the services of an inspection element are required at a subsupplier's plant, Part Two, Chapter 6, Plan 6, Prime - Subinspection Element Actions, is applicable and will be used in conjunction with this plan.

2-1-302. Quality assurance verification areas. a. The QAREp shall determine where each action covering the control of quality will be performed. If the supplier has not furnished a plant layout or flow chart with this information, the QAREp will prepare a chart.

b. The supplier's activities will be divided into quality assurance verification areas. The division into areas will consider the nature of the activity to be verified and the anticipated workload in each area. These areas will be used for both system and product verification.

c. Detailed instructions, together with records, charts, schedules, etc., will be combined and available in a book, folder, or jacket file for all quality actions to be performed in each quality assurance verification area. These documents will be maintained for use in the particular area.

2-1-303. Verification plan. a. The QAREp shall start the development of the verification plan he will use no later than immediately after the preproduction conference. If a preproduction conference is not held, the plan shall be started immediately after the procurement document, contract, purchase order or work order is received and reviewed as required by AMCR 715-508, Volume I.

b. In case of critical items or certain examinations and tests requiring advanced techniques, the QAREp will request, through channels, the assistance of specialists of the inspection and quality assurance elements.

c. As the verification plan is developed, manpower requirements must be established, including numbers necessary and the time phase for assignment.

d. Development of the verification plan for evaluation of the supplier's system and product verification inspection shall be predicated upon review of the following:

- (1) Results of initial planning, prior to the preproduction conference, as specified in AMCR 715-508, Volume I.
- (2) Contractual or procurement documents.
- (3) Supplier's material flow chart or plant layout chart.
- (4) Supplier's general and detailed procedures or instructions.
- (5) Quality assurance letters from the quality assurance element.
- (6) Part Six of this regulation.

e. The following procedures will be used when product verification inspection by an inspection element, at a subsupplier's plant, is not justified and a prime supplier elects to control quality by requiring a subsupplier to maintain an effective inspection system:

- (1) The prime inspection element shall require the prime supplier to:
 - (a) Assure that adequate procedures governing control of quality are implemented by the subsupplier.
 - (b) Review and approve the procedures and make them available to the prime inspection element for review.
 - (c) Furnish the prime inspection element objective evidence of the controls established and exercised over the subsupplier's inspection system.

(d) Inspect, as necessary, upon receipt of the supplies, to assure conformance to requirements of the procurement documents.

(e) Adjust the type and amount of receiving inspection, proportionate with quality and amount of controls exercised by the subsupplier.

(2) The prime inspection element will plan to perform verification of supplier's accuracy or product verification based on the quality evidence submitted and the nature of the item.

f. Action required at each supplier's station, area, function or operation shall be analyzed. The following will be considered:

(1) Conformance evaluation, as required by paragraph 2-1-400 f.

(2) Product verification, as required by paragraph 2-1-403.

g. The QARep will plan to prepare verification instructions for each quality assurance verification area to include:

(1) For system evaluation:

(a) AMC Form 1178, System Evaluation Results, for recording evaluation results, using inspection system check lists, Part Three, Chapter 2.

(b) AMC Form 1180, Record Check List, for evaluating records.

(c) Necessary instructions for posting evaluation results to applicable forms.

(d) A listing of assemblies or components requiring accuracy inspection. Accuracy inspection shall not be performed on assemblies or components requiring product verification inspection.

(e) Use of supplier's detailed procedures or instructions, if specific instructions are not contained in the procurement documents.

(f) Provisions for specific processes.

(2) For product verification:

(a) Definitive instructions, indicating acceptance criteria referenced in the procurement documents, e.g., detail item specification, SQAP's, engineering drawings, etc., and type and amount of inspection, including quality assurance techniques to be used, Part Three of this regulation.

- (b) Instructions for preparation of AMC Form 1181, Verification Check List, using supplier's inspection instructions when definitive instructions are not specified.
- (c) Determine the inspection required for each quality assurance verification area, considering:
 - 1. Production schedules.
 - 2. The method of inspection to be performed.
 - 3. Previous procurement performance.
 - 4. Pre-award survey data.
 - 5. Special processes involved.
 - 6. Any other considerations, as recommended by the commodity command.

h. When definitive instructions are specified in the procurement documents, the QAREp shall confine the selection of characteristics of the product to necessary inspection to be performed. The type and amount of inspection shall be in accordance with quality requirements of the procurement documents.

i. When there are no definitive quality assurance provisions in the procurement documents, the QAREp will plan to use the supplier's accepted inspection instructions, as prescribed by 2-1-304 below, in performing product verification inspection.

j. Prior to placing the verification plan in operation, the QAREp shall:

- (1) Indoctrinate personnel on the requirements of each assigned task.
- (2) Define any special instructions resulting from previous procurement or current directives.
- (3) If action is at a subsupplier's plant, the sub QAREp shall enlist the aid of specialists, and request information from the prime QAREp, as needed.

2-1-304. Use of supplier's inspection instructions. a. When there are no definitive quality assurance provisions in the procurement documents, the QAREp will use the supplier's accepted inspection instructions. In determining the adequacy of the supplier's instructions, consideration will be given to the following:

- (1) Complexity and intended use of the item.
- (2) Characteristics affecting assembly, operation and interchangeability.
- (3) Type and amount of inspection, i.e., 100% or sampling by variables or attributes for defects, defectives or defects per hundred units.
- (4) Type of inspection equipment.
- (5) Acceptable quality level (AQL).
- (6) Acceptance and rejection criteria.

b. The QARep will select the characteristics listed in the supplier's instruction that will be inspected by the government. When the supplier's inspection instructions call for 100% inspection, the QARep shall plan for product verification inspection as follows:

- (1) Select the appropriate sampling plan prescribed in Part Three of this regulation, applicable to inspection.
- (2) Select the important characteristics listed in the supplier's inspection instructions and the quality assurance requirements of the procurement documents. Record these characteristics on AMC Form 1181.
- (3) Assign the acceptable quality level by characteristic; .015% for criticals; .25% for majors; .40% for minors.
- (4) Inspection of critical characteristics in accordance with Part Three, Chapter 7.
- (5) Inspection for major and minor defects in accordance with the tables used in the applicable sampling standard.
- (6) Record the results of inspection on the appropriate forms for the applicable sampling plan.

c. When the supplier is authorized to perform sampling inspection, the QARep will plan to:

- (1) Utilize the characteristics listed in the supplier's inspection instructions.
- (2) Use the supplier's approved acceptable quality level, as indicated, for the characteristics.

- (3) Use the acceptance and rejection criteria, as indicated in the supplier's inspection instructions.
- (4) Select the important inspection characteristics listed. Record selected characteristics on AMC Form 1181.
- (5) For characteristics classified as critical, refer to Part Three, Chapter 7.
- (6) Record the results of inspection on the appropriate forms for the applicable sampling plan.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 1
PLAN 1 — INSPECTION SYSTEM PROCEDURES

Section IV. QUALITY ASSURANCE OPERATIONS

2-1-400. System evaluation. a. The QAREp shall perform or direct his staff to perform an initial system evaluation and subsequent evaluation continually and concurrently with product verification inspection, using the documents prepared and assembled during the government system planning phase (par. 2-1-303 g (1)) for the particular quality assurance verification area.

b. The general procedures, outlining management policy, responsibilities and the limits within which each function will operate, shall be evaluated by the QAREp as soon after the preproduction conference as possible. Evaluation for adequacy of supplier's documented inspection system shall be made as follows:

- (1) Compare each item listed in Part Three, Chapter 2, Inspection System Check Lists, with requirements of procurement documents to determine if the item or elements of the item are applicable or not applicable. In making this determination, a careful analysis will be made to avoid requirements for unnecessary procedures or instructions as well as omission of those that are necessary.
- (2) Some procurement documents will have elements peculiar to the product which are not included in the inspection system check list. These elements will be added, as required. The additional elements must be specifically covered by requirements of the procurement documents to justify inclusion for evaluation.
- (3) Prepare an AMC Form 1178, System Evaluation Results, for adequacy evaluation of the general procedures and list applicable items from Inspection System Check List - GP, General Procedures. Forms used to reflect adequacy evaluations shall be reserved to record future adequacy evaluations of general procedures.
- (4) Evaluate the general procedures and record findings on the form. When portions of the written description of the system are inadequate or omitted, each evaluation or resubmission by the supplier will be recorded. General procedures found to be not acceptable will require immediate correction by the supplier.

- (5) When the general procedures are determined to be acceptable, the inspection element may, at its option, initiate a written notice to the supplier of the acceptability of the inspection system. In all cases where the system does not provide the quality assurance required by the procurement documents, written disapproval must be furnished to the supplier by the officer administering the contract or order. Any interim acceptance of the supplier's general procedures, prior to production, must be with reservations. The reservations will allow for a progressive evaluation of each phase of a system as production progresses. An over-all acceptance of a system must be contingent upon:

- (a) The supplier's conformance to his procedures and instructions.
- (b) Availability of objective evidence that the system does, in fact, result in an acceptable product.

c. The detailed procedures or instructions that specify what to do, when, where and how to do it, what the decision rules are, and what actions are to be taken when the decisions are made, shall be available to cover each function or operation necessary to the system. These procedures or instructions will be evaluated by the QAREp as soon as they are developed by the supplier for use.

- (1) Detailed procedures or instructions in the item specification or SQAP's can be used by the supplier as inspection instructions. They shall be supported by any additional instructions deemed necessary. These additional instructions shall cover information, such as type of inspection, inspection levels, etc., to be used to implement an inspection system.
- (2) When the supplier does not use the detailed procedures or instructions in the item specification or SQAP's, his inspection instructions shall include all inspection requirements and indicate at least an equivalent type and amount of inspection.
- (3) The QAREp shall prepare an AMC Form 1178 and record results of adequacy evaluations of the detailed procedures or instructions for each applicable function or activity, as contained in Part Three, Chapter 2, check lists 1 through 13.
- (4) Prepare, as necessary, check lists to support items from Part Three, Chapter 2, Inspection System Check Lists. The supporting check lists must relate directly to the particular supplier's system to be evaluated. When prepared, a supplemental check list shall bear the same number as the item as listed in the inspection system check list, followed by an "s." Each item on the supplemental check list shall bear the same designation, followed by a number serially assigned. For example, a

supplemental check list for "Process Control" will be designated "5 s" and the items on the supplemental list, "5 s 1" "5 s 2" etc. Elements of supporting check lists shall not be listed directly in column 11 of the AMC Form 1178. Only the item number, as listed in the inspection system check list, shall be shown in column 11.

d. When specifications require government approval of process procedures, the QARep will assure that the prime supplier furnishes such procedures. When the supplier subcontracts work to be performed under such specifications, the procedures required shall be properly authenticated by a responsible official of the prime supplier.

- (1) The QARep shall determine if the process requires:
 - (a) Certification of personnel.
 - (b) Certification of equipment.
 - (c) Written procedures.
 - (d) Workmanship samples.
- (2) When certifications or written plans of special processes are required, the supplier must have available evidence that these requirements are satisfied.
- (3) Special processes include, but are not limited to, welding equipment and personnel, heat treating, packaging, electroplating and various forms of nondestructive testing.

e. The QARep shall be alert for continued adequacy of the initial procedures during duration of the contract, and of revisions or additions which are made. He shall also be alert for any omissions in the supplier's procedures which were not apparent when the procedures were reviewed for adequacy prior to production. Continual conformance evaluations will be accomplished to determine if the supplier's procedures or instructions are effective to the extent that their application does assure the degree of quality required.

f. Conformance evaluations will be conducted by the QARep as follows:

- (1) Determine supplier's conformance to the general and detailed procedures or instructions, predicated on his activities in connection with the items on the inspection system check lists, which were determined to be applicable and adequate.
- (2) Record results of conformance evaluations for each function or activity

on AMC Form 1178. Separate AMC Forms 1178 shall be used for recording evaluation of conformance to general and detailed procedures or instructions. The original AMC Form 1178 used for adequacy evaluation shall be reserved for further adequacy evaluation throughout the duration of the contract or order.

- (3) The QAREp shall take immediate action to require the elimination of all unsatisfactory conditions in the supplier's system as soon as they are detected. All deficiencies shall be entered on AMC Form 1178. Each deficiency or unacceptable condition will be rated as serious or trivial and acted upon as follows:
 - (a) For serious deficiencies, issue an AMC Form 1176, Corrective Action Record, and record a brief description and the number of the AMC Form 1176 on AMC Form 1178. Take necessary on-the-spot corrective action. Serious deficiencies are those that are likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.
 - (b) For trivial deficiencies, take on-the-spot correction action; provide for follow-up and record on AMC Form 1178. When a trivial deficiency is repetitious or actions taken by the supplier are inconclusive, consideration should be given to advisability of issuing an AMC Form 1176. Trivial deficiencies are other than serious and are not likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.
- (4) When evaluating inspection and testing records, Inspection System Check List No. 2, only those records generated by the supplier, recording the results of an act of inspection will be evaluated as specified below:
 - (a) The QAREp will prepare an AMC Form 1180, Record Check List.
 1. The master list of characteristics, Part Five, Chapter 5, shall be used in the preparation of an individual check list for a particular record. The master list contains known characteristics which render a record suitable for the recognition and recording of quality of material produced.
 2. The number assigned to a characteristic in the master list of characteristics shall be retained and used for the characteristic on AMC Form 1180, if applicable to the record. This system allows ready evaluation of a variety of records or all records in a particular plant, to determine the characteristic or characteristics for which

deficiencies most frequently occur. For example, if Characteristic 24, Disposition of Product, is discovered as a deficiency in many records rather than an isolated case of one record, breakdown of the entire system of disposition of product is indicated, as opposed to errors of one employee or one department.

3. A separate AMC Form 1180 shall be established for each record to be evaluated. The characteristics reflected on the master list shall be utilized to establish separate check lists. Only those characteristics that have an adverse effect on the control of quality shall be listed. Only unbiased, impersonal facts will be considered. Numerical sequence of characteristics, as listed on the master check list, shall be retained when check lists are prepared.
4. If the same record form is used in different areas for different purposes, separate AMC Forms 1180 will be prepared, and the characteristics listed may or may not be the same. If a record form is used for the same purpose in many areas, and it is desirable to evaluate it on a plant-wide basis, only one AMC Form 1180 is necessary. If it is more desirable to evaluate use by area, separate AMC Forms 1180, identified by different numbers and areas, shall be prepared.
- (b) A random sample for each type of supplier's records generated since the last record evaluation shall be selected and evaluated by comparing each characteristic on the record to be checked with appropriate characteristics on the AMC Form 1180.
- (c) AMC Form 1023, Record Evaluation Summary, shall be used to reflect record evaluation results for each type of record. Errors are to be tallied and analyzed to determine the degree and extent of errors observed in the sample. All deficiencies shall be called to the attention of the supplier and an AMC Form 1176 will be issued when:
 1. Satisfactory on-the-spot corrective actions cannot be concluded.
 2. Previous on-the-spot corrective actions were not effective.
 3. Errors are of a serious nature.
 4. Trivial errors are repetitive.
- (d) The AMC Form 1023 will be filed with the AMC Form 1178.
- (e) AMC Form 1022, Record Evaluation Results, can be prepared as a worksheet, if desired.

- (f) Each time a record evaluation is performed, an entry will be made on the AMC Form 1178 for Inspection System Check List No. 2, opposite the appropriate item or items evaluated.

(5) When evaluating measuring and test equipment, Inspection System Check List No. 4 will be used for the supplier's final inspection equipment, production equipment used in lieu of inspection equipment and all measurement standards. When the conditions of Plan 7, Calibration System Evaluation Procedures, apply, that plan will be used in conjunction with this check list.

- (a) Measuring and test equipment can be grouped into categories of similar types of equipment.
- (b) When the QAREp is scheduling conformance evaluations in this area for the grouped category, consideration will be given to the following:

1. Quality of the product produced, as determined by inspection results.
2. Complexity of equipment and time required for verification.
3. Effectiveness of previous corrective actions.
4. Conditions under which used.
5. Frequency of use.
6. Performance characteristics of test equipment.

- (c) The QAREp will conduct verification checks for measuring and test equipment as follows:

1. Select the measuring or test equipment to be verified by type, group or unit.
2. A random sample of measuring or test equipment shall be selected for verification. Sample size will be determined by MIL-STD-105, Table I, Inspection Level II, Table II-A.
3. Determine from the supplier's inspection instruction, record cards, drawings, or other documents, the characteristics to be verified.
4. Verify the selected characteristics. The QAREp will plan to perform this verification by witnessing examination and tests performed by the supplier when practicable. Witnessing shall only be performed

by personnel capable of performing the examination or test independently. When the supplier has an acceptable calibration system, the examinations and tests performed for accuracy checks will not be duplicated to satisfy requirements of 2-1-401 below. Examination and tests performed will be used to serve a dual purpose. This includes initial certification or subsequent checks to verify continued accuracy.

5. Each dimensional, functional or calibration characteristic found out-of-tolerance shall be classed as an error, as follows:

- (a) If the out-of-tolerance condition is in the direction which would permit submission for acceptance of nonconforming product and where assembly is the obligation of the supplier, permits subsequent assembly, the error shall be classed as serious.
- (b) When assembly of the item inspected with the inspection equipment is the obligation of the supplier and the out-of-tolerance condition is in the direction which would not permit subsequent assembly, the error shall be classed as trivial.

6. In comparing findings with the last check made and recorded by the supplier on his records, the following will be classed as errors:

- (a) The supplier's record reflects an out-of-tolerance condition, which verifies findings in 5 above, and the equipment was released for use. This is another error and counted in addition to the error in 5 (a) or (b) above.
- (b) The error in 5 (a) above, was attributed to the use of master equipment that was faulty or not calibrated. This error will be an additional serious error.

7. Each dimensional or functional characteristic found in error, that does not relate to the final measurement, but requires additional caution shall be recorded and classed as trivial errors also. For example, an indicator gage that sticks occasionally and requires hand manipulation to obtain a reading; a setting screw not properly sealed by the supplier's equipment checker.

8. Record results of each accuracy check on the AMC Form 1024, Accuracy Inspection Worksheet.

9. Post results of each accuracy check to AMC Form 1025, Accuracy Inspection Summary. This form can be used for direct recording of

results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.

- (d) The QAREp will conduct accuracy checks on production equipment used in lieu of inspection equipment, as follows:
 - 1. Determine the jig, fixture or tool master to be inspected from the group, without prior notice to the supplier. Care must be exercised to avoid interruption of the supplier's operation.
 - 2. Using the supplier's instruction, witness each check, measurement or observation made by the supplier.
 - 3. If the instruction requires a sequence of operations to be performed, witness each step in the sequence as it is performed.
 - 4. Take whatever on-the-spot corrective action that is necessary.
 - 5. Record results of each accuracy check on AMC Form 1024.
 - 6. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.
 - 7. If the AMC Form 1025 indicates trends for which corrective action is desirable, in addition to the on-the-spot corrective action taken, prepare and issue an AMC Form 1176.
 - 8. If a piece of equipment is rejected for inspection use, by either the supplier or the QAREp, the QAREp shall require the supplier to investigate the product recently inspected, using the equipment, as well as correcting the equipment.
 - (a) If the product is found to be conforming, no further action is required on inspection of product.
 - (b) If the product is found to be nonconforming, continue investigation of all product inspected by use of the equipment, in reverse order, until all nonconforming product has been located.
 - 9. If there is continued poor inspection of the equipment, as evidenced by the issuance of two or more AMC Forms 1176, without adequate corrective action being taken by the supplier, the QAREp will pursue the following course of action:

- (a) Notify the supplier that further use of the production equipment for inspection will not be an acceptable element of his system.
 - (b) Notify the supplier that inspection must be performed using measuring instruments, gages, or other inspection equipment.
 - (c) Discontinue acceptance of product until the supplier has provided inspection equipment or proven the product to be acceptable.
10. Inspection records relating to measuring and test equipment, generated by the supplier, shall be evaluated in accordance with Inspection System Check List No. 2.
- (e) Each time the procedures in (5) (c) and (d) above, are used for evaluation of those portions of the supplier's inspection system, an entry shall be made on the AMC Form 1178 for Inspection System Check List No. 4, opposite the appropriate item or items evaluated.
- (6) The evaluation of inspection by the supplier will be determined by use of Inspection System Check List No. 10. In applying this check list, the accuracy of supplier's inspection will be determined.
- (a) Accuracy inspection is the evaluation of a supplier's inspection results to determine the supplier's effectiveness in the performance of his inspection. Effectiveness is not only predicated on the supplier concluding that deficient product is conforming, but also the supplier concluding that conforming product is nonconforming.
 - (b) Accuracy inspection of supplier's inspection results will be restricted to lots, parts or materials not subjected to scheduled product verification inspection.
 - (c) When a large number of products are available for verification at a specific station, they can be grouped providing a similarity of type of product is maintained.
 - (d) The QARep will select the appropriate verification method.
1. Method 1 is for determining the ability of the supplier's inspector to conform to inspection instructions. The method is particularly suitable in receiving inspection areas where lot formation cannot be controlled or in other areas where small lots of similar items are inspected at irregular intervals. It is also suitable where statistical techniques ordinarily used for analysis would be impractical due to

lack of homogeneity, number of lots processed or other reasons.

2. Method II is for determining the supplier's accuracy in performing tests.
 3. Method III is for determining supplier's inspection accuracy when the supplier is using statistical sampling and an estimated process average can be computed.
- (e) When it has been determined to use Method I, the QAREp will conduct accuracy checks as follows:
1. Select at random the lot to be checked, without prior notice to the supplier, if possible.
 2. Using the same inspection or quality control instruction, classification of characteristics or list of characteristics used by the supplier, select the characteristics to be inspected and inspect the same sample inspected by the supplier. When 100% inspection is conducted by the supplier, select a sample in accordance with MIL-STD-105, Table I, Inspection Level II, Table II-A.
 3. Determine the number of errors made by the supplier on the selected characteristics. An error will be the classifying of a defective item as not defective or a conforming item as defective.
 4. Take on-the-spot corrective action.
 5. Record results of each accuracy check on AMC Form 1024.
 6. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.
- (f) When it has been determined to use Method II for determining supplier's accuracy in performing tests, the QAREp will conduct accuracy checks as follows:
1. Select at random the lot to be checked, without prior notice to the supplier, if possible.
 2. Using the same test procedure used by the supplier, test the same units tested by the supplier. The number of units to be tested for one check will be determined as follows:

- (a) When the supplier is testing a sample, test one-half the sample.
 - (b) When the supplier is testing 100%, determine the sample size by MIL-STD-105, Table I, Inspection Level S-4, Table II-A. In the absence of specific inspection lots, a day's production may be considered a lot.
3. If the test procedures require a sequence of operations to be performed, a check of each step in the sequence is required. Each step and measurement will be considered as one characteristic in determining errors.
 4. Determine the number of errors made by the supplier.
 5. Take on-the-spot corrective action.
 6. Record results of each accuracy check on AMC Form 1024.
 7. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.
- (g) When it has been determined to use Method III, the QARep will conduct accuracy checks as follows:
1. Select at random the lot to be checked, without prior notice to the supplier, if possible. Lots found to be nonconforming by the supplier, and reinspected by the supplier, are not to be used under this method.
 2. Determine the first sample size, n_1 , using Part Three, Chapter 4, Figure 4, Sampling Table for Inspection Accuracy - Method III. The minimum sample size for comparing results is five. Sample results may be accumulated from several lots of like items to obtain sufficient number to make a comparison. The accumulation of results to obtain sufficient number to make a comparison will be considered one check.
 3. Select the required sample at random.
 4. Using the same inspection or quality control instruction, classification of characteristics or list of characteristics used by the supplier, inspect the sample.
 5. Obtain the supplier's process average for each class of characteristics.

If the supplier is using 100% inspection or changes from sampling to 100% inspection and it is expected that he will continue, Method I should be considered for use. When 100% inspection by the supplier appears to be temporary, the acceptable quality level for the class may be used in lieu of the supplier's process average. This will require no immediate change in methods.

6. The process average should be based on the last ten lots inspected or for all lots inspected in two months, whichever computation includes the fewer lots. If there are less than five lots, Method I should be considered for use.
7. Referring to Part Three, Chapter 4, Figure 5, Comparison Table of Inspection Results - Method III, find the process average (percent defective) that is nearest to the supplier's computed process average. Find the S number and the C number listed in the table for the sample. Compare these numbers with the number of defective units found in the accuracy check inspection for each class of characteristics.
 - (a) If the number of defectives is zero, or less than the S number, the supplier's inspection is considered effective.
 - (b) If the number of defectives is equal to the S number, or is between S and C numbers, poor inspection can be suspected. When poor inspection is suspected, take a second sample equal to the number listed in column n_2 , Part Three, Chapter 4, Figure 4.
 - (c) If the number of defectives in the cumulative sample, n_c , is equal to the S number or is between S and C for the cumulative sample, n_c , poor inspection is still probable. Take necessary action in conjunction with supplier's authorized representative and record on AMC Form 1025.
 - (d) If the number of defectives equals or exceeds the C value in the first or cumulative sample, poor inspection is certain. This is considered a serious error on the part of the supplier. Corrective action will be taken with the supplier's authorized representative.
8. Record results of each accuracy check on AMC Form 1024.
9. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC

Form 1024 omitted when operations are under good control and few errors are observed.

- (h) The QAREp will take on-the-spot corrective action on all errors discovered during accuracy inspection. Action will be taken as follows:

1. Evaluate the error and determine if the error is serious or trivial.

- (a) Serious errors are those that are likely to result in the supplier concluding nonconforming product is conforming.
- (b) Trivial errors are other than serious and are not likely to result in the supplier concluding nonconforming product is conforming.

2. For serious or repetitive trivial errors, take on-the-spot corrective action and issue an AMC Form 1176.

3. For trivial errors, take on-the-spot corrective action.

4. If upon posting to the AMC Form 1025, or simultaneous review of AMC Forms 1024 and 1025 it is determined that an unsatisfactory condition exists, appropriate corrective action should be taken.

- (a) For Method I or II, AMC Form 1176 shall be issued when satisfactory on-the-spot corrective action cannot be concluded, or previous corrective actions were not effective.
- (b) For Method III, AMC Form 1176 will be issued when cumulative samples were inspected on two consecutive individual checks or more than two checks in a consecutive run of seven checks in which poor inspection was suspected, and satisfactory on-the-spot corrective action cannot be concluded, or previous corrective actions were not effective.

- (i) Each time accuracy inspection is performed, an entry shall be made on AMC Form 1178 for Inspection System Check List No. 10, opposite the appropriate item or items evaluated.

2-1-401. Inspection equipment. a. The QAREp will make maximum use of the supplier's inspection equipment. The QAREp is responsible for assuring the accuracy of supplier's final inspection equipment prior to use. The accuracy of the equipment shall be certified by qualified personnel; either the QAREp, the supplier if an acceptable calibration system is being used, an authorized commercial laboratory or by government metrology personnel.

b. Government supplied inspection equipment shall be maintained as required by AMCR 715-508, Volume I.

2-1-402. Preproduction, initial production and first piece inspection. a. Preproduction or initial production samples are frequently a requirement of the procurement documents. In those cases where the requirement is not definitively stated, the QAREp will perform first piece inspection, i.e., inspection of the first item, or representative sample, produced and presented for government acceptance.

b. The QAREp shall consider recommending a waiver of the preproduction or initial production inspection to the quality assurance element when procurement is a continuation of a contract and past history has been satisfactory. The waiver will be for the entire sample or for a reduction in quantity. Likewise, first piece inspection will be omitted under similar circumstances.

c. Assistance of specialists such as, metrology personnel, material and special process specialists, etc., is particularly important during the first inspection of material on a contract. The QAREp is responsible for arranging for this assistance.

d. The supplier will be requested to furnish a copy of his inspection report. The report shall include, as a minimum:

- (1) Supplier's name and address.
- (2) Contract, purchase order or work order number.
- (3) Nomenclature.
- (4) Drawing number or part number and revision.
- (5) Specification number and revision.
- (6) A listing of each characteristic inspected.
- (7) Method of inspection.
- (8) Results for each characteristic inspected. When numerical results cannot be given, results will be shown as satisfactory or unsatisfactory.
- (9) Information relating to manufacturing problems and any other problems encountered.
- (10) Required statements of findings.

e. The QAREp shall review the requirements of the procurement documents

and the report furnished by the supplier and will proceed with inspection when the supplier's report indicates that material is satisfactory. The inspection will include all characteristics selected for inspection during initial planning, special characteristics and tests required by the procurement documents, and as many additional characteristics as is possible to inspect.

f. The QAREp will prepare a report of the results of examinations and tests performed. The report shall be on the appropriate form described in Part Five. Any narrative information required to fully describe the inspection results will also be included.

g. The QAREp will take action with the supplier on all discrepancies. Since the available quantity of samples, in many cases, will be small, it will sometimes be desirable to release preproduction or initial production samples to the quality assurance element, if required, for final inspection with known defects. This information must be included in the inspection report prepared by the QAREp. Before release of defective samples for final inspection, the inspection element shall obtain prior approval from the quality assurance element.

h. When the above inspection has been on a preproduction or initial production sample, the inspection element will:

- (1) Notify the quality assurance element of the availability of the sample.
- (2) Arrange for supplier representation at the final inspection, if desirable.
- (3) Make available to the quality assurance element copies of the supplier's inspection report, the QAREp's report, and copies of any corrective action records.

i. Upon receipt of final inspection results from the quality assurance element, the inspection element will immediately notify the QAREp and the officer administering the contract or order. The officer administering the contract will immediately notify the supplier of the results. Notification will be by the most rapid means available. In all cases, formal notification to the supplier must be confirmed by a written communication.

- (1) Formal written notification will be made whether the sample is accepted, conditionally accepted, or rejected.
- (2) If conditionally accepted or rejected, the supplier will be notified of all defects or deficiencies. He will also be advised of any requirement for resubmission of a sample.

j. Under the following circumstances, the QAREp, through the inspection

element, will obtain from the quality assurance element, instructions regarding the submission of another sample:

- (1) When the supplier, for any reason, changes his method or process of manufacture.
- (2) When the supplier changes the material from that used in the original initial production sample.
- (3) When the supplier changes his source of supply of finished parts or components.
- (4) When the supplier submits, in his initial sample, a component obtained from any source other than that which will be his source of supply for mass production.

k. The QARep and the supplier can use the sample as a visual and working standard through the life of the contract or order. It is the responsibility of the quality assurance element to arrange for the return of the sample, when the final inspection was conducted at other than the supplier's plant, to the supplier's facility, when practicable. The sample should be shipped as the last item under the contract or order.

2-1-403. Product verification. a. The QARep shall perform or direct his staff to perform product verification inspection concurrently with system evaluation, using the documents prepared and assembled during the government system planning phase (par. 2-1-303 g (2)) for the particular quality assurance verification area.

b. If, during product verification inspection and during various stages of manufacture and assembly, design or suspected design intent failures are encountered, immediately notify the supplier, the officer administering the contract, and the quality assurance element. Notification will be by telephone or teletype and confirmed by letter.

c. For product verification inspection of critical characteristics, the QARep will follow the instructions contained in Part Three, Chapter 7.

d. For product verification inspection of major and minor characteristics, the QARep will follow the instructions contained in Part Three, Chapters 8 through 11, as applicable.

e. Product verification by the QARep, independent of inspection performed by the supplier, is preferable to combining inspection activities. When independent inspection is impracticable or uneconomical, inspection by the QARep may consist of witnessing the inspection performed by the supplier. The act of witnessing inspection shall only be performed by personnel capable of performing the examination

st independently.

- (1) When it has been determined that product verification inspection be performed by witnessing the supplier's inspection, the QARep shall perform as follows:
 - (a) Obtain a copy of the inspection instruction for the item of product to be inspected.
 - (b) Assure the sample is selected at random.
 - (c) Using the inspection instruction, note each examination, test or step in a sequence of operations required to be performed.
 - (d) As the supplier performs the inspection, closely witness each examination and test. If the QARep determines that the supplier performs inspection and assumes that accurate readings and decisions of conformance are made by the supplier, it shall not be classified as "witnessing."
 - (e) Independent of the supplier, read the measuring equipment to determine if the item meets requirements. The readings may be taken directly from equipment such as dial indicators, gages for pressures or flow, ammeters or voltmeters, scales for weight, or standard micrometers or height gages. Readings may also be taken from charts, graphs or tapes electrically or mechanically produced by inspection equipment during performance of the inspection.
- (2) Results of the inspection shall be recorded by the QARep, including the statement "inspection witnessed."
 - (a) In recording results of inspection, the QARep shall not record a defect or failure to meet a requirement as being found by the QARep if the defect or defective is properly recognized and recorded by the supplier.
 - (b) A defect or failure shall be recorded by the QARep when:
 1. A defect exists in the unit of product after the supplier's inspector has declared the unit conforms to requirements.
 2. The supplier's inspector improperly records the defect or defective in supplier records.
- (3) Acceptability of the product shall be determined by the QARep in

accordance with the applicable quality assurance techniques being used.

- (4) The quality assurance element or a procurement document may require the QAREp to perform certain examinations and tests. If the requirement is not specified, the QAREp has the authority to perform or witness inspection.
- (5) Some of the conditions causing independent inspection to be impracticable or uneconomical are as follows:
 - (a) Excessive time required to perform the inspection.
 - (b) Large size of an item, requiring special handling equipment.
 - (c) Necessity for expensive or duplicate inspection equipment.
 - (d) A test is destructive and limited quantities of the item are available.
 - (e) A test is destructive and the cost of the item is high.
 - (f) Cost of performing the examination or test is high.
- (6) In witnessing inspection, the QAREp must make decisions of acceptability, independent of the supplier's decisions of conformance, even though the physical conduct of the inspection is performed by the supplier.
- (7) The forms to be used in recording results of inspection shall be the same as those specified in the quality assurance techniques being used. The forms are to be prepared as though the inspection was performed by the QAREp and clearly marked, "inspection witnessed."

f. The QAREp must continually record all activities and furnish any data required by the quality assurance element. The QAREp shall record the results of product verification inspection in accordance with the applicable verification recording instructions (Part Five).

g. The QAREp shall avoid complete reinspection of product after it has once been inspected for acceptance. However, if the material is modified, repaired or reworked after original inspection, some inspection is necessary. The amount of inspection shall be sufficient to assure quality and the material to be repaired should be inspected by the QAREp, both before and after the repairs.

- (1) Paragraphs (2) through (7) below, specify the inspection to be performed in verifying the quality of material in two categories:

- (a) Material inspected by the QARep to original requirements; subsequently, requirements are changed which necessitates rework, repair or modification.
 - (b) Material found to be nonconforming by the supplier or the QARep, to be repaired under an approved repair procedure.
- (2) When requirements are changed, the change will be analyzed to determine whether the change will be classified as "rework" or "repair."
- (3) In preparing for the inspection, the QARep will use documents or information such as the following:
 - (a) The change, modification or work order directing the alteration of the material or equipment.
 - (b) Pertinent drawings, procedures, instructions or quality standards.
 - (c) Approved procedures for repair.
 - (d) Examination or test requirements furnished by the quality assurance element.
- (4) If material is to be repaired, the QARep will arrange with the supplier for inspection prior to repair as well as after repair. Inspection prior to repair will be for the purpose of determining the following:
 - (a) The material is in the condition for which a repair procedure has been approved.
 - (b) Each deficiency is within any limitations which are a part of the approved repair procedure.
 - (c) There are no other conditions existing, not permitting repair.
- (5) Inspection of repaired material for characteristics not affected by repair shall be the regular inspection for the plan being used for normal material.
- (6) Duplication of inspection performed prior to modification, repair or rework shall be avoided. Characteristics not affected will not be re-inspected. In determining the amount and kind of quality verification required, the QARep shall take the following into consideration:
 - (a) The extent of the modification, repair or rework.

- (b) The function, process or area affected.
 - (c) Possible damage to integral parts or adjacent items not being altered, including possible damage if the rework or repair procedures are not properly followed.
 - (d) Any special requirements furnished by the quality assurance element.
 - (e) The inspection instruction, classification of characteristics, quality assurance provisions, quality standards, etc., used for the inspection prior to alteration.
- (7) The QAREp will record on the appropriate form or report, information which will include the following details:
 - (a) Positive identification of all characteristics inspected.
 - (b) Tests performed.
 - (c) Deficiencies or nonconformances observed.
 - (d) Disposition of the material.
 - (e) Any on-the-spot corrective action accomplished.
 - (f) Any other information required to record compliance with any special requirements furnished by the quality assurance element.
- (8) Paragraphs (2) through (7) above, do not apply to material which the supplier reworks before offering to the QAREp for inspection and acceptance. The rework performed as a part of normal production processes or as a result of the supplier's own inspection is controlled by the supplier's system and is not subject to the controls of the paragraphs cited.
- (9) The processing and approval of repair procedures will be considered for nonconforming material, which cannot be reworked, found by either the supplier or the QAREp. If it is determined that a method of repair is available or can be devised, the deficiency shall be analyzed and placed in one of the following two categories:
 - (a) Deficiencies of a nonrecurring nature which are not expected to be repeated. This includes deficiencies caused by isolated circumstances for which positive corrective action can be taken. Requests to repair material in this category will be processed in accordance with AMCR 715-508, Volume I.

- (b) Deficiencies of a recurring nature, cause for which is inherent in the process or operation and the process or operation cannot be improved. This includes deficiencies in material when the product quality depends entirely on the human element. Repair procedures will be considered for this category of material.
- (10) The QARep shall process requests for approval of repair procedures as follows:
- (a) Review the proposed repair procedure.
 - (b) Add any pertinent comments.
 - (c) Forward to the quality assurance element, through the inspection element headquarters.
 - (d) After return from the quality assurance element, the inspection element shall obtain any administrative approvals required in addition to the technical approval, and forward, through appropriate authority, to the supplier. In the case of an industrial concern, the approval of the officer administering the contract is necessary, and he will notify the supplier of approval. In the case of other suppliers, the approval of the officials directing the operations of the supplier will be required.
 - (e) Material repaired in accordance with an approved repair procedure without restrictions, after successfully passing inspection, shall be treated as conforming material. If restrictions are placed on use of the material, it must be segregated and identified when delivered to the consumer.

2-1-404. Acceptance examination and testing. a. An acceptance test is a test of individual products, or lots of materiel items, which have been submitted for acceptance to determine conformance of the products or lots with requirements, prior to acceptance.

- (1) Acceptance tests cover three general types of tests, in addition to acceptance examination. These are as follows:
 - (a) Routine tests, conducted in conjunction with the examinations for acceptance, such as torque test, conductivity test, static balance test, etc.
 - (b) Tests which may be performed on a limited number of samples due to the nature of the test, such as salt spray test, drop test, vibration test, etc.

- (c) Specific tests normally performed by the government and not the supplier, such as ballistic testing of ammunition, proof testing of armor plate, missile firing tests, etc.

(2) The QAREp is responsible for:

- (a) Compliance with acceptance examination and testing requirements. This will be accomplished in accordance with quality assurance techniques (Part Three). These techniques provide for compliance with requirements of section 4 of specifications, SQAP's, and any other instructions provided by the quality assurance element.
- (b) The following, when items are of commercial design and acceptance is based upon the supplier's quality testing requirements:
 - 1. Compliance with instructions issued by the quality assurance element.
 - 2. Reporting to the quality assurance element, through the inspection element headquarters, when compliance with instructions is impracticable. The report shall include reasons for inability to comply with instructions for acceptance examination and testing, reasons for inability to comply with the established system in the application of acceptance criteria, and proposals for alternate examinations, tests or application of acceptance criteria.
- (c) Preparation of reports for all acceptance examinations and tests performed.
- (d) The following, when it is required that certain acceptance tests be performed by a testing installation rather than the QAREp:
 - 1. Assuring that only lots or quantities of items designated for acceptance tests have been subjected to all other required final acceptance inspection.
 - 2. Controlling the lot or quantity of items from which the test samples are to be selected.
 - 3. The random selection of samples.
 - 4. Action regarding acceptance or rejection, based upon results of tests reported by the testing installation.
 - 5. Issuance of an AMC Form 1176 to the supplier when reports of test failures or deficiencies are received.

- (e) Reporting to the quality assurance element design or suspected design deficiencies. Notification should be by telephone or teletype and confirmed by letter.

b. Acceptance examination and testing of an item which is listed on a qualified products list shall not be waived under production contracts or orders. The QARep shall determine acceptability as follows:

- (1) When the product is an end item of procurement, acceptance will be based upon the following:
 - (a) Supplier's inspection records of the examinations and tests.
 - (b) Application of a (2) above.
- (2) When the product is procured by a prime supplier for use in connection with a prime contract or order, acceptance will be based upon the following:
 - (a) Records, properly certified by the prime supplier, of the manufacturer's inspection and tests required by section 4 of the specification.
 - (b) The inspection and tests conducted by the prime supplier in his receiving inspection to verify or support his certification of the manufacturer's record.
 - (c) Application of a (2) above.

c. Acceptance examination and testing of an item that has been examined and tested and determined that it is an "or-equal" item shall not be waived when being procured under production contracts or orders. The QARep shall determine acceptability as described in b (1) and (2) above.

d. The QARep shall issue an AMC Form 1176 in accordance with the quality assurance techniques in use when the inspection is performed.

e. The QARep shall issue an AMC Form 1176 when tests are performed by another testing installation, and reports of test failures or deficiencies are received.

2-1-405. Special examination and testing requirements. a. Control samples are samples selected for a control test of production items at periodic intervals, performed by the supplier, to disclose any manufacturing deficiencies under the applicable specification. The tests performed are more extensive than routine acceptance tests and also will frequently be more severe.

(1) The QARep shall be responsible for:

- (a) Selection of the control sample to be tested.
 - (b) Assuring that control samples have been subjected to and passed all examinations and acceptance tests, required by specifications, prior to being subjected to the control tests.
 - (c) Assuring that all requirements for control tests are satisfied.
 - (d) Witnessing of tests performed by the supplier. This shall be accomplished in accordance with 2-1-403 d above.
 - (e) Recording results of inspection.
 - (f) Action, as necessary, to enforce action specified in case of failure.
 - (g) Issuing an AMC Form 1176 in case a failure occurs during the control test or a deficiency is found during examination.
 - 1. An AMC Form 1176 shall be issued whether the QARep or the supplier records the failure, or observes and records the deficiencies.
 - 2. A copy of the AMC Form 1176 shall be furnished to the quality assurance element as soon as practicable.
- (2) In performing the witnessing of tests that run over an extended period of time, the QARep will make intermittent checks of the test in operation. The intermittent checks should be adjusted commensurate with the character of the test and the desired results.

b. A comparison test is a test of random samples of production line items conducted as a quality assurance measure, to detect any design, manufacturing or inspection deficiencies that may reduce the effective operation of the items by the using agency.

(1) Although the quality assurance element is responsible for preparing re-requirements for, and the actual testing of comparison samples, the QARep is assigned certain responsibilities, as follows:

- (a) Notification to the quality assurance element in advance of the date the item or items will be at the place designated for comparison testing.
- (b) Selection of items required for comparison testing. All samples

selected for testing will be selected at random from materiel that has been accepted by the QAREp.

- (c) Taking action with the supplier on failures or deficiencies reported by the quality assurance element.
 - (d) Determining if deficiencies reported warrant increasing the level of acceptance inspection when less than the normal level is in effect.
 - (e) When requested by the quality assurance element, furnishing reports on action taken to correct deficiencies.
- (2) The QAREp shall issue an AMC Form 1176 for all serious deficiencies reported by the quality assurance element.
 - (3) The random sample or samples selected for comparison testing will not necessarily be items that were inspected for acceptance. The random selection may designate a sample for comparison tests from the uninspected portion of a lot that was accepted by sampling techniques. The QAREp shall not inspect the samples so selected but shall submit them as is for comparison tests.
 - (4) Comparison testing is not sufficient when tests are for interchangeability. The necessary requirements for comparison tests/interchangeability in c below, shall apply when it has been determined that such tests are required.

c. A comparison test/interchangeability is a comparison test performed by interchanging parts of or for one assembly with parts of or for other assemblies.

(1) The QAREp is responsible for:

- (a) When interchangeability testing is performed by the QAREp:
 - 1. Selection of items required for testing. All samples selected will be selected at random from lots or quantities of materiel that were subjected to final acceptance inspection and accepted.
 - 2. Taking action with the supplier on all failures attributive to nonconforming product, revealed by the test.
 - 3. Notifying the quality assurance element, through the inspection element headquarters, of failures that are, or are suspected, attributive to design.

4. Determining if deficiencies revealed by test, warrant increasing the amount of acceptance inspection when less than normal is in effect.
 5. Furnishing reports on all examinations and tests performed, as directed by the quality assurance element.
 6. When requested by the quality assurance element, furnishing reports on action taken to correct deficiencies.
- (b) When interchangeability testing is performed by another installation:
1. Notification to the quality assurance element, through the inspection element headquarters, in advance of the date the item or items will be at the place designated for testing.
 2. Selection of items required for testing. Samples will be selected at random from materiel that has been accepted by the QAREp.
 3. Taking action with the supplier on failures or deficiencies reported by the quality assurance element.
 4. Determining if deficiencies reported warrant increasing the amount of acceptance inspection when less than normal is in effect.
 5. When requested by the quality assurance element, furnishing reports on action taken to correct deficiencies.
- (2) The QAREp shall issue an AMC Form 1176 for all serious deficiencies found or reported by the quality assurance element.
- (3) Interchangeability tests will be performed at designated intervals to determine if the material will fit and function as specified in the procurement documents. Generally, however, interchangeability tests will be held when more than one supplier is producing the same item. The parts that make up the item or the item itself shall be selected at random and properly identified under the supervision of the QAREp. The material will be forwarded to a designated testing facility where it will be inspected, tested, and disassembled for dimensional inspection. The parts from each unit will be interchanged and reassembled from each predetermined lot. The item will again be tested.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 1
PLAN 1 — INSPECTION SYSTEM PROCEDURES

Section V. ANALYSIS OF SUPPLIER AND GOVERNMENT OPERATIONS

2-1-500. Scope. The objectives of these actions are to prevent, or detect and preclude the continuation of unsatisfactory conditions, and to serve as a basis for reduction in government verification efforts.

2-1-501. Purpose. a. Analysis of verification operations shall be employed to insure the continued efficiency of the QARep and that the verification effort is concentrated on those areas consistent with quality data.

b. Analysis of operations shall also include determining the supplier's effectiveness in formulating and implementing a satisfactory system of control.

c. If the quality assurance element has specified a particular method for analyzing a supplier's performance, either by a quality assurance letter for a particular procurement or by a special requirement included in Part Six, that method shall be used by the QARep. The following requirements for review and analysis shall not duplicate specified methods. One method only shall be used.

2-1-502. Procedure. a. The QARep shall systematically analyze all product verification, system evaluation, and corrective action summary forms, and also perform case-by-case analysis of quality data to find shifts or trends that may not otherwise be apparent in summary forms. Included in this analysis is the consideration of supplier's promptness in correcting and precluding nonconformances. The QARep shall perform the following actions:

- (1) Analyze and evaluate data accumulated daily on AMC Form 1178, System Evaluation Results, to determine effectiveness of the supplier's adherence to his procedures.
 - (a) Evaluate the deficiencies to assure that they are properly identified and on-the-spot actions of the supplier are effective.
 - (b) Determine if follow-up actions reflect timely remedial action by the supplier.
 - (c) Determine if deficiencies found in one area or station require action

due to a possible adverse effect on other areas or stations.

- (d) Assure that an AMC Form 1176, Corrective Action Record, is issued on serious deficiencies.
- (2) Analyze and evaluate monthly, data accumulated on the AMC Form 1179, System Evaluation Summary, to determine the effectiveness of the supplier's adherence to his procedures.
 - (a) Review and analyze the number of recorded inadequacies and the number of AMC Forms 1176 issued during the latest monthly period.
 - 1. Determine if the inadequacies involve procedural elements as having an adverse effect on acceptability of the end item.
 - 2. Determine whether the difference between the number of AMC Forms 1176 issued and the number awaiting disposition action from the supplier warrants further action with the supplier.
 - 3. Determine whether all evaluation actions have been completed, as scheduled and the need for programming unchecked elements for the next evaluation period.
 - (b) Review and analyze the number of recorded inadequacies and the number of AMC Forms 1176 issued, comparing the latest evaluation results with previous summaries.
 - 1. Determine whether the number of inadequacies for the latest month has changed.
 - (a) If the number of inadequacies has increased, reschedule evaluation action in excess of regular frequency for the particular system element check point until improvement of the condition is observed.
 - (b) If the number of inadequacies has decreased, assure adjustment in scheduling of system element verification action consistent with the effectiveness of the supplier's improvement action.
 - 2. Determine the necessity for continuing follow-up action when supplier's corrective action is satisfactory.
 - 3. Review and analyze the number of AMC Forms 1176 incomplete and determine whether the extension of time or inaction by the supplier is justified or requires follow-up verification action.

4. Review the evaluation results of the past cyclic verification period and determine whether unchecked elements require rescheduling or exclusion.
 5. Determine the need for adjusting the schedule and frequency of system evaluation for subsequent verifications.
- (3) Review the records evaluation results, accumulated on AMC Form 1023, Record Evaluation Summary, in supplementing the information gained from AMC Form 1179, to ascertain the degree of supplier's conformance to his procedures.
 - (a) Tabulate the number of repetitive, like errors and analyze the seriousness of the observed errors and determine whether corrective action steps have been taken.
 - (b) Determine whether the supplier's corrective action is satisfactory and effective to preclude recurrence or requires follow-up action.
 - (c) Ascertain whether the observed errors involve important acceptance inspection and test characteristics necessitating a meeting with the supplier or issuance of a formal letter.
 - (d) Determine whether the existing records evaluation schedule is adequate or in need of rescheduling as a result of observed errors.
 - (4) Review data generated on AMC Form 1025, Accuracy Inspection Summary, in supplementing the information gained from AMC Form 1179, to ascertain the proficiency of supplier's inspection. This will be accomplished as related to measuring and test equipment, production equipment used in lieu of inspection equipment and the accuracy of supplier's inspection of the product.
 - (5) Analyze product verification inspection results accumulated daily on the prescribed recording forms from each quality assurance verification area.
 - (a) Determine that the contents of the inspection records are complete and accurate, reflecting pertinent information of the inspected material, e.g., item identification, nomenclature, specification, date, contract data and material disposition.
 - (b) Determine that the identification of the characteristic, AQL, sample size, quantity and description of defects and degree of inspection (reduced, normal, tightened) are correct and in accordance with specified requirements.

- (c) Determine whether the supplier's disposition or corrective action is satisfactory or warrants additional action.
- (6) Analyze product verification inspection results, summarized monthly, compiled from individual worksheets or summaries.
- (a) Determine that the contents posted to the summary form contain complete and accurate entries obtained from the individual inspection worksheets, when worksheets are used.
 - (b) Review the number of recorded lot rejections. If the results are considered abnormal:
 - 1. Adjust the degree of verification in accordance with the requirements of the applicable plan.
 - 2. Maintain the effort over the affected area, until supplier's corrective action is considered satisfactory.
 - 3. If the supplier refuses to take action, corrective action is considered unsatisfactory or condition is unchanged, recommend suspension of inspection, through supervisory channels, to the officer administering the contract or order.
 - (c) Relate deficiencies with system evaluations for action to employ a more effective system evaluation and supplier corrective action to reduce probability of defective materiel.
- (7) Analyze and evaluate daily, the deficiencies reported on AMC Form 1176 for identifying the type of nonconformance and determine the urgency of action.
- (a) Ascertain that the posted entries accurately reference the source to which the deficiency is related or observed.
 - (b) Assure that the deficiency is clearly described to preclude misrepresentation of required actions of the supplier.
 - (c) Determine that the type of corrective action to be requested parallels the severity of the deficiency or problem.
 - (d) Analyze the supplier's explanation and determine if the corrective action taken is satisfactory to preclude the reported deficiency from recurring.

- (e) Determine if appropriate follow-up action has been specified to assure that supplier's action is effective in eliminating the unsatisfactory condition.
- (8) Analyze and evaluate the deficiencies reported on AMC Form 1177, Corrective Action Record Summary, to detect abnormal or out-of-control conditions on a monthly basis, or more frequently, to prevent repetitiveness of unsatisfactory conditions.
 - (a) Evaluate the deficiencies and determine if the type and class of deficiency is repetitive or indicative of a trend.
 - (b) Evaluate the number of deficiencies and determine if an excessive number of AMC Forms 1176 have been issued or emanate from a particular quality assurance verification area.
 - (c) Determine if the supplier's remedial actions were effective by comparing verification results and noting any reappearance of like conditions.
 - (d) Determine if the quantity of the repetitive deficiencies involves critical or functional characteristics. Also, if recurring trivial discrepancies require issuing an AMC Form 1176.
 - (e) Assure that the time involved pending supplier's reply on final disposition or corrective action is justified by conditions.
 - (f) Compare supplier's previous record of reported deficiencies against current AMC Form 1177 to determine the amount of verification effort and frequency required at the particular quality assurance verification area.

b. Total effectiveness determination of the supplier's system shall include the analysis of quality data received from using activities or other inspection agencies. The QAREP shall review reports covering material failure or recommended material improvement action.

- (1) Determine the seriousness and type of reported condition for necessary corrective action.
- (2) Ascertain the supplier's intent or proposed action regarding the cited condition.
- (3) Determine the kind and amount of verification checks that are required at the appropriate quality assurance verification area.

c. The QAREp shall employ reduced verification actions in quality assurance verification areas whenever evidence from quality data analysis indicates satisfactory supplier control.

d. In summation of the analysis performed in a and b above, unresolved or recurring quality problems shall be brought to the attention of the supplier. This will be accomplished by formal review with responsible management personnel of the supplier.

e. The QAREp shall notify his supervisor and request appropriate action on all problems of a major or serious nature that cannot be resolved in a timely manner. Product deficiencies attributed to design or suspected design failures shall be reported, through appropriate channels, to the quality assurance element.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 2
PLAN 2 — QUALITY PROGRAM PROCEDURES

Section I. GENERAL

2-2-100. Scope. a. This chapter prescribes the technical quality assurance actions required by personnel of inspection elements when a quality program is required of a supplier. Quality program requirements will be specified in contracts or orders by reference to MIL-Q-9858, Quality Program Requirements; NASA Quality Publication NPC 200-2, Quality Program Provisions for Space System Contractors; a detailed item specification; a class of item specification; or by other means in the procurement documents.

b. For each procurement, the procurement documents shall be reviewed in detail and all applicable portions of this plan shall be followed. Those portions of the plan which have been modified or a specific application specified on an individual procurement basis by the responsible procurement activity will be substituted. Such deviations from the established plan shall be specifically specified in writing when the procurement documents are furnished the QARep or included as a special requirement by the procuring activity in Part Six of this regulation.

2-2-101. Inspection planning. a. The development of the government verification plan must be done concurrently with the development of general and detailed procedures or instructions by the supplier (par. 2-2-200 a). This concurrent development is necessary so that the verification plan will be compatible with the supplier's methods, processes, inspection stations, etc.

b. The verification plan must be complete and approved by the QARep's immediate supervisor, or higher echelons, no later than the time the initial production sample or first piece is ready for inspection.

2-2-102. System evaluation and product verification schedules. a. System evaluation and product verification inspection will be reduced from initial frequency when the following requirements are satisfied consistently:

- (1) Data indicates adequate control of quality by the supplier.
- (2) Supplier's corrective action is effective in precluding recurrence of unsatisfactory conditions.

b. System evaluation review and positive actions to require the supplier to

take corrective action will be intensified from initial efforts when any one or all of the following conditions occur:

- (1) Data indicates inadequate control of quality by the supplier.
- (2) It is necessary for the QARep to tighten inspection.
- (3) Supplier's corrective action is ineffective in precluding recurrence of unsatisfactory conditions.

c. The QARep will schedule unannounced evaluations covering each area, function or operation of the supplier's system, at the time of manufacture or receipt of first items, but no later than immediately after initial production or first piece inspection of the end item. Scheduling will be a continual function throughout production, with increased effort when there is evidence of, or it is suspected that the supplier is not conforming to his system. Likewise, efforts shall be decreased when the supplier is conforming and the system is effective.

- (1) The schedule for system evaluation of an area, function or operation shall be adjusted as indicated by results of other evaluations and verifications conducted. For example, during product verification an unusual number of defective items were found which were caused by a breakdown in the control of measuring equipment.
- (2) Unannounced evaluations, covering each area, function or operation of the supplier's system, must be made at least every 90 days. However, the effort in this area must be continual and trouble spots evaluated as frequently as necessary until effective corrective action is taken.

d. The QARep will perform product verification inspection in accordance with the verification plan. For items of a complex nature, the QARep will perform in-process product verification inspection only when quality of the item cannot be determined by verification inspection of the completed item.

2-2-103. Relationship of QAReps with headquarters staff and commodity command specialists. a. The QARep will arrange for assistance of inspection element specialists, such as quality assurance, packaging, special processes, metrology, etc., as required.

b. The QARep will make available his system and product verification plan for review by service segments of inspection element headquarters, and upon request, the quality assurance element.

c. The inspection element headquarters will assist in the initial evaluation of

new suppliers and perform subsequent unannounced evaluations at least every six months. These evaluations will be in addition to evaluations conducted by the QAREp; however, will be performed as an assistance to the QAREp in assuring that the supplier's system is effective and that the QAREp is adequately performing the evaluation.

d. The QAREp will report any design or suspected design deficiencies encountered to the officer administering the contract or order and the quality assurance element, through supervisory channels.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 2
PLAN 2 — QUALITY PROGRAM PROCEDURES

Section II. SUPPLIER OBLIGATIONS

2-2-200. General system. a. The supplier must document his quality program as early as possible, at least immediately following the preproduction conference or equivalent point in time if no conference is held.

b. The supplier's quality program plan will include general procedures, supported by detailed procedures or instructions for each station, area, function or operation.

c. When MIL-C-45662, Calibration System Requirements, is a requirement, the supplier's documented calibration system will include necessary procedures to comply with the specification.

2-2-201. General procedures. a. General procedures shall be required for each function required to be performed by the particular procurement document.

b. The analysis of the general procedures shall be based upon contract requirements, including quality assurance provisions of the specifications.

2-2-202. Detailed procedures or instructions. a. Detailed procedures or instructions shall be available to cover each supplier's station, area, function or operation.

b. The detailed procedures or instructions shall be based upon contract requirements, including quality assurance provisions, drawings, specifications, SQAP's, SIP's, or definitive inspection instructions listing characteristics or possible defects. The supplier's procedures which differ from those specified in the technical requirements will be considered adequate when they provide, as a minimum, quality assurance equivalent to that required by the technical requirements. In case of disagreement, the procedures shall strictly adhere to the technical requirements.

c. The supplier will be permitted to submit repair procedures for deficiencies of a recurring nature, cause for which is inherent in the process or operation, and the process or operation cannot be improved.

- (1) Repair procedures are operations outside the scope of normal operations to produce an item to meet specified requirements. Operations within

the classification are represented by the following examples:

- (a) An undersize shaft, plated to bring up to specified diameter.
 - (b) An oversize hole, plugged and redrilled to specified size.
 - (c) Porosity in a casting which is ground out, then refilled by welding.
 - (d) A defective component of an assembly welded, brazed, soldered, riveted, bolted or otherwise altered to correct a deficiency.
 - (e) An item unsatisfactorily preserved, which is furnished additional and different preservative, wrapping or protection.
 - (f) A substitute operation or process in lieu of repetition of the required operation or process.
- (2) Repair procedures shall be in writing, and submitted to the QARep for transmittal to the quality assurance element. As a minimum, the proposed procedure shall include the following items, as applicable:
- (a) Complete description of the proposed method of repair.
 - (b) Identification of raw materials to be used.
 - (c) Identification of any components or items to be added to the material, which are not specified in the technical procurement documents.
 - (d) Limits of deficiencies to be repaired by number, size, volume, etc., as applicable.
 - (e) Estimated number of items or quantity of product to be repaired.
- (3) Repair procedures remain valid and acceptable for use throughout the life of the contract or order, unless otherwise stipulated. Resubmission of copies of the same repair procedure, for approval for use on subsequent contracts or orders is not required. However, approval for use of a previously approved repair procedure shall be requested, approved, and made a matter of record with each contract or order for which it is to be used.

2-2-203. Operations and plant layout. a. The supplier shall be required to:

- (1) Assure that his processes, procedures and written descriptions comply with requirements.

- (2) Assure that his procedures and instructions are adequately implemented by his personnel.
- (3) Assure that his subsuppliers are fully qualified to operate and maintain the processes and procedures.
- (4) Require his subsuppliers to furnish objective evidence of compliance with procurement requirements and quality of the product.
- (5) Conduct periodic verification of evidence submitted by subsuppliers.
- (6) Affix a signature of an authorized official to any documents furnished by subsuppliers to certify approval and authenticity.
- (7) Furnish all pertinent information to the QARep for review.

b. A plant layout or flow chart, indicating the areas, inspection stations and operations, will be obtained from the supplier.

2-2-204. Subsupplier operations. The prime supplier is responsible for controlling the quality of the materiel, including preservation and packaging, supplied by the subsupplier. If the subsupplier's operations are extensive, the prime supplier will require that the subsupplier have a documented system. The prime supplier is responsible for furnishing an acceptable description of the subsupplier's system. The prime supplier shall evaluate the subsupplier's system to verify compliance and to perform sufficient product inspection to verify the subsupplier's findings.

2-2-205. Corrective action. a. The supplier shall take prompt action to correct assignable conditions which have resulted or could result in submission to the government, supplies and services which do not conform to requirements.

b. If prompt corrective action is not taken to correct unsatisfactory conditions, the QARep shall advise the officer administering the contract or order, through appropriate channels.

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Section III. GOVERNMENT SYSTEM PLANNING

2-2-300. Initial system evaluation. a. The QAREp shall conduct adequacy evaluations of the supplier's general and detailed procedures or instructions as soon as possible in order that all inadequacies shall be resolved prior to the initial presentation of product for acceptance.

b. The general procedures shall be evaluated as soon after the preproduction conference as possible.

c. The supplier's general quality program procedures shall have been determined to be acceptable prior to evaluating the detail requirements of the system. The general procedures shall be evaluated individually and collectively to assure complete coverage.

d. The supplier's detailed quality program procedures or instructions will be evaluated as soon as they are developed by the supplier for use.

2-2-301. Subsupplier activities. a. The QAREp, at the supplier's plant, shall review the applicable procurement documents and referenced data to determine the need for and extent of inspection or services to be performed by a QAREp at a subsupplier's facility. His decision will be made in accordance with AMCR 715-508, Volume I.

b. When the services of an inspection element are required at a subsupplier's plant, Part Two, Chapter 6, Plan 6, Prime - Subinspection Element Actions, is applicable and will be used in conjunction with this plan.

2-2-302. Quality assurance verification areas. a. The QAREp shall determine where each action covering the control of quality will be performed. If the supplier has not furnished a plant layout or flow chart with this information, the QAREp will prepare a chart.

b. The supplier's activities will be divided into quality assurance verification areas. The division into areas will consider the nature of the activity to be verified and the anticipated work load in each area. These areas will be used for both systems and product verification.

c. Detailed instructions, together with records, charts, schedules, etc., will be combined and available in a book, folder, or jacket file for all quality actions to be performed in each quality assurance verification area. These documents will be maintained for use in the particular area.

2-2-303. Verification plan. a. The QARep shall start the development of the verification plan he will use no later than immediately after the preproduction conference. If a preproduction conference is not held, the plan should be started immediately after the procurement document, contract or order is received and reviewed as required by AMCR 715-508, Volume 1.

b. In case of critical items or certain examinations and tests requiring advanced techniques, the QARep should request, through channels, the assistance of specialists of the inspection and quality assurance elements.

c. As the verification plan is developed, manpower requirements must be established, including numbers necessary and the time phase for assignment.

d. Development of the verification plan for evaluation of the supplier's system and product verification inspection shall be predicated upon review of the following:

- (1) Results of initial planning, prior to the preproduction conference, as specified in AMCR 715-508, Volume 1.
- (2) Contractual or procurement documents.
- (3) Supplier's material flow chart or plant layout chart.
- (4) Supplier's general and detailed procedures or instructions.
- (5) Quality assurance letters from the quality assurance element.
- (6) Part Six of this regulation.

e. The following procedures will be used when product verification inspection by a QARep at a subsupplier's plant is not justified and a prime supplier elects to control quality by requiring a subsupplier to maintain an effective inspection system:

- (1) The prime QARep shall require the prime supplier to:
 - (a) Assure that adequate procedures governing control of quality are implemented by the subsupplier.
 - (b) Review and approve the procedures and make them available to the prime QARep for review.

- (c) Furnish the prime QAREp objective evidence of the controls established and exercised over the subsupplier's system for control of quality.
 - (d) Inspect, as necessary, upon receipt of the supplies, to assure conformance to requirements of the procurement documents.
 - (e) Adjust the type and amount of receiving inspection, proportionate with quality and amount of controls exercised by the subsupplier.
- (2) The prime QAREp will plan to perform verification of the supplier's accuracy or product verification, based on the quality evidence submitted and the nature of the item.

f. Actions required at each supplier's station, area, function or operation shall be analyzed. The following actions will be considered:

- (1) Conformance evaluation, using the supplier's accepted quality system, and as necessary, Quality Control and Reliability Handbook (Interim) H110, Evaluation of Contractor Quality Control Systems. The forms referenced in this regulation will be used to reflect evaluations.
- (2) Product verification, as required by 2-2-403.
- (3) Evaluation and verification of inspection and quality records, as provided in Part Three, Chapter 3.
- (4) Evaluation and verification of supplier's inspection accuracy, as provided in Part Three, Chapter 4.
- (5) Evaluation and verification of supplier's use of measuring and test equipment, as provided in Part Three, Chapter 5.
- (6) Evaluation and verification of supplier's use of production equipment used for inspection, as provided in Part Three, Chapter 6.

g. The QAREp will plan to prepare verification instructions for each quality assurance verification area, to include:

- (1) For system evaluation:
 - (a) AMC Form 1178, System Evaluation Results, for recording evaluation results.
 - (b) Necessary instructions for posting evaluation results to applicable forms.

- (c) Use of supplier's detailed procedures or instructions, if specific instructions are not contained in the procurement documents.
 - (d) Provisions for specific processes.
- (2) For inspection and quality records evaluation:
 - (a) AMC Form 1180, Record Check List, for evaluating records.
 - (b) AMC Form 1022, Record Evaluation Results, for recording evaluation results.
 - (c) Necessary instructions for posting evaluation results to applicable forms.
 - (d) Determine scheduling and sample size, as required by Part Three, Chapter 3.
- (3) For supplier's inspection accuracy:
 - (a) AMC Form 1024, Accuracy Inspection Worksheet, for recording evaluation results.
 - (b) Necessary instructions for posting evaluation results to applicable forms.
 - (c) A listing of assemblies or components requiring accuracy inspection. Accuracy inspection shall not be performed on assemblies or components requiring product verification inspection.
 - (d) Determine scheduling and sample size, as required by Part Three, Chapter 4.
- (4) For supplier's use of measuring and test equipment:
 - (a) AMC Form 1024 for recording evaluation results.
 - (b) Necessary instructions for posting evaluation results to applicable forms.
 - (c) Determine scheduling and sample size, as required by Part Three, Chapter 5.
- (5) For supplier's use of production equipment used for inspection:

- (a) AMC Form 1024 for recording evaluation results.
 - (b) Necessary instructions for posting evaluation results to applicable forms.
 - (c) Determine scheduling and sample size, as required by Part Three, Chapter 6.
- (6) For product verification:
- (a) Definitive instructions, indicating acceptance criteria referenced in the procurement documents, e.g., detail item specification, SQAP's, engineering drawings, etc., and type and amount of inspection, including quality assurance techniques to be used, Part Three of this regulation.
 - (b) Instructions for preparation of AMC Form 1181, Verification Check List, using supplier's inspection instructions when definitive instructions are not specified.
 - (c) Determine the inspection required for each quality assurance verification area, considering:
 - 1. Production schedules.
 - 2. The method of inspection to be performed.
 - 3. Previous procurement performance.
 - 4. Pre-award survey data.
 - 5. Special processes involved.
 - 6. Any other considerations, as recommended by the commodity command.

h. When definitive instructions are specified in the procurement documents, the QARep shall confine the selection of characteristics of the product to necessary inspections to be performed. The type and amount of inspection shall be in accordance with quality requirements of the procurement documents.

i. When there are no definitive quality assurance provisions in the procurement documents, the QARep shall plan to use the supplier's accepted inspection instructions, as prescribed by 2-2-304 below, in performing product verification inspection.

j. Prior to placing the verification plan in operation, the QARep shall:

- (1) Indoctrinate personnel on the requirements of each assigned task.
- (2) Define any special instructions resulting from previous procurement or current directives.
- (3) If action is at a subsupplier's plant, the sub QARep shall enlist the aid of specialists, and request information from the prime QARep, as needed.

2-2-304. Use of supplier's inspection instructions. a. In planning to use the supplier's inspection instructions, the QARep will review and determine the adequacy of the supplier's instructions, giving consideration to the following:

- (1) Complexity and intended use of the item.
- (2) Characteristics affecting assembly, operation and interchangeability.
- (3) Type and amount of inspection, i.e., 100% or sampling by variables or attributes for defects, defectives or defects per hundred units.
- (4) Type of inspection equipment.
- (5) Acceptable quality level (AQL).
- (6) Acceptance and rejection criteria.

b. The QARep will select the characteristics listed on the supplier's instruction that will be inspected by the government. When the supplier's inspection instructions call for 100% inspection, the QARep shall plan for product verification inspection as follows:

- (1) Select the appropriate sampling plan described in Part Three of this regulation, applicable to inspection.
- (2) Select the important characteristics listed in the supplier's inspection instructions and the quality assurance requirements of the procurement documents. Record these characteristics on AMC Form 1181.
- (3) Assign the acceptable quality level by characteristic; .015% for criticals; .25% for majors; .40% for minors.
- (4) Inspect critical characteristics in accordance with Part Three, Chapter 7.

- (5) Inspect major and minor characteristics in accordance with the tables used in the applicable sampling standard.
- (6) Record the results of inspection on the appropriate forms for the applicable sampling plan.

c. When the supplier is authorized to perform sampling, the QAREP will plan to:

- (1) Utilize the characteristics listed on the supplier's inspection instructions.
- (2) Use the supplier's approved acceptable quality level, as indicated for the characteristics.
- (3) Use the acceptance and rejection criteria, as indicated on the supplier's inspection instructions.
- (4) Select the important inspection characteristics listed. Record the selected characteristics on AMC Form 1181.
- (5) For characteristics classified as critical, refer to Part Three, Chapter 7.
- (6) Record the results of inspection on the appropriate forms for the applicable sampling plan.

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Section IV. QUALITY ASSURANCE OPERATIONS

2-2-400. System evaluation. a. The QARep shall perform or direct his staff to perform system evaluation continually and concurrently with product verification inspection, using the documents prepared and assembled during the government system planning phase (par. 2-2-303 g (1) through (5)) for the particular quality assurance verification area.

b. Adequacy of the supplier's general and detailed procedures or instructions for acceptability is the responsibility of the quality assurance element. Evaluation will be accomplished in conjunction with the inspection element. The inspection element will make necessary arrangements with the quality assurance element to provide for a co-ordinated effort in accomplishing this function. The following procedure shall be used:

- (1) The QARep will work with the supplier; receive the written quality program; add copies of their preliminary evaluations and any pertinent comments or recommendations, and present the program through appropriate channels, to the quality assurance element for final acceptance or rejection. Delivery to the quality assurance element may be to its office or the quality assurance element may come on-site, as prearranged with the inspection element.
- (2) The QARep will provide for any necessary interim contacts with the supplier during the generation of the written quality program. If the quality assurance element desires any interim contacts, they shall arrange for them through and with the QARep.
- (3) Any notification of final disapproval of any portions of the written quality program must be made by the officer administering the contract or order.

c. The general procedures, outlining management policy, responsibilities and the limits within which each function will operate, shall be evaluated as soon after the preproduction conference as possible. Evaluation of adequacy of supplier's written description of his quality program shall be made as follows:

- (1) The QARep will perform a preliminary evaluation by comparing each

item in the evaluation check lists of Handbook H110, with requirements of the procurement documents to determine whether the check lists or elements of the check lists are applicable or not applicable. In making this determination, a careful analysis should be made to avoid requirements for unnecessary procedures or instructions, as well as omission of those that are necessary.

- (2) Some procurement documents will have elements peculiar to the product which are not included in the evaluation check list. These elements shall be added, as required. The additional elements must be specifically covered by requirements of the procurement documents to justify inclusion for evaluation.
- (3) Prepare an AMC Form 1178, System Evaluation Results, for adequacy evaluation of the general procedures and list applicable items from Handbook H110, General Procedures, Check List. Forms used to reflect adequacy evaluations shall be reserved to record future adequacy evaluations of general procedures.
- (4) Evaluate the general procedures and record findings on the form. When portions of the written description of the system are inadequate, or omitted, each evaluation or resubmission by the supplier shall be recorded. General procedures found to be not acceptable shall require immediate correction by the supplier.
- (5) When the quality assurance element has received and evaluated the general procedures, they shall notify the inspection element. When the general procedures are determined to be acceptable, the officer administering the contract will, at his option, initiate a written notice to the supplier of the acceptability of the quality program. In all cases where the system does not provide the quality assurance required by the procurement documents, written disapproval must be furnished to the supplier by the officer administering the contract or order. Any interim acceptance of the supplier's general procedures, prior to production, must be with reservations. The reservations will allow for a progressive evaluation of each phase of a system as production progresses. An over-all acceptance of a system must be contingent upon:
 - (a) The supplier's conformance to his procedures and instructions.
 - (b) Availability of objective evidence that the quality program does, in fact, result in an acceptable product.

d. The detailed procedures or instructions that specify what to do, when, where and how to do it, what the decision rules are, and what action is to be taken

when the decisions are made, shall be available to cover each function or operation necessary to the system. The procedures or instructions will be evaluated by the QAREp as soon as they are developed by the supplier for use.

- (1) Detailed procedures or instructions in the item specification or SQAP's can be used by the supplier as inspection instructions. When used they should be supported by any additional instructions deemed necessary. These instructions shall cover information such as type of inspection, inspection levels, acceptable quality levels (AQL's), etc., to be used to implement a quality program.
- (2) When the supplier does not use the detailed procedures or instructions in the item specification or SQAP's, his inspection instructions shall include all inspection requirements and indicate at least an equivalent type and amount of inspection.
- (3) The QAREp shall prepare an AMC Form 1178 and record results of adequacy evaluations of the detailed procedures or instructions for each applicable function or activity, as contained in Handbook H110, check lists 1 through 15.
- (4) Prepare, as necessary, checks lists to support items from the check lists of Handbook H110. The supporting check lists should relate directly to the particular supplier's system to be evaluated. When prepared, a supplemental check list shall bear the same number as the item as listed in the check list of H110, followed by an "s." Each item on the supplemental check list shall bear the same designation followed by a number serially assigned. For example, a supplemental check list for "control of in-process material" Item 3 of Check List No. 8, Indication of Inspection Status, will be designated "3 s" and the items on the supplemental list, "3 s 1" "3 s 2" etc.
- (5) In certain cases it will be necessary to add items to check lists of H110. For example, a supplier may be performing continuous sampling inspection as described in MIL-STD-1235, Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes. In this case, an item will be added to Check List No. 7, Sampling Inspection, preceding the number by a "z" i.e., "z 4. Continuous sampling by attributes in accordance with MIL-STD-1235."
- (6) In all adequacy and conformance evaluations, the following item shall be added to Evaluation Check List No. 1 of Handbook H110:

Z10. Identification of written procedures, both general and detailed.

- (7) Using the supplier's acceptable general procedures and with reference to applicable elements of check lists, make an evaluation to determine if all procedures or instructions are available and adequate to cover each function required by the general procedures.
- (8) Record results of evaluation on the forms contained in Part Five.

e. The QARep shall be alert for continued adequacy of the initial procedures during duration of the contract, and of revisions or additions which are made. He shall also be alert for any omissions in the supplier's procedures which were not apparent when the procedures were reviewed for adequacy prior to production. Continual conformance evaluations will be accomplished to determine if the supplier's procedures or instructions are effective to the extent that their application does assure the degree of quality required.

f. The conformance evaluation will be conducted by the QARep as follows:

- (1) Determine supplier's conformance to his general and detailed procedures or instructions, predicated on the check lists in Handbook H110.
- (2) Record results of conformance evaluations for each function or activity on AMC Form 1178. Separate AMC Forms 1178 shall be used for recording evaluation of conformance to general and detailed procedures or instructions. The original AMC Form 1178 used for adequacy evaluation shall be reserved for further adequacy evaluations throughout the duration of the contract or order.

g. Concurrently with system evaluation, the QARep will implement Part Three, Chapter 3, Evaluation and Verification of Inspection and Quality Records.

- (1) This procedure provides a systematic method for evaluating supplier's records. The type of records evaluated are those reflecting results of an act of inspection. The inspection recorded will be direct inspection of the product or supplies, or, also be of processes, inspection equipment or other factors which have a direct bearing on determining the quality and acceptability of product or supplies. In applying Part Three, Chapter 3, it is not intended that the validity of the results of inspection recorded be proven or tested. The use, control, accuracy of completion of the record, and similar items, are evaluated.
- (2) Implementation of Part Three, Chapter 3, will be accomplished by using the documents prepared and assembled during the government system planning phase (par. 2-2-303 g (2)) for the particular quality assurance verification area.

h. The accuracy of the supplier's inspection results will be evaluated to determine the supplier's effectiveness in the performance of his inspection. The QARep will implement Part Three, Chapter 4, Evaluation and Verification of Supplier's Inspection Accuracy.

- (1) This procedure specifies methods for performing check inspection and evaluation to determine the supplier's accuracy in performing an act of inspection. It is used to determine the extent to which the supplier's inspectors make mistakes in their inspection of product or packaging of product. Effectiveness of supplier inspection is based on how well he judges parts or packaging of parts to be defective or not defective.
- (2) This procedure is not to be used as a substitute for product verification inspection. The application of Part Three, Chapter 4, will be a contributing factor to a determination of the amount of product verification required, but this procedure shall not be used to determine product quality.
- (3) Application of Part Three, Chapter 4, will not be used in those areas where regular independent verification inspection is being employed on parts or components of subassemblies or assemblies for the major or end item under procurement.
- (4) Implementation of Part Three, Chapter 4, will be accomplished by using documents prepared and assembled during the government system planning phase (par. 2-2-303 g (3)) for the particular quality assurance verification area.

i. The evaluation and verification of the supplier's use of measuring and test equipment will be conducted as outlined in Part Three, Chapter 5, Evaluation and Verification of Supplier's Use of Measuring and Test Equipment. When the conditions of Plan 7, Calibration System Evaluation Procedures, apply, that plan will be used in conjunction with check list in Handbook H110.

- (1) Periodic inspection of equipment used by the supplier for inspection is required to determine that the supplier properly maintains the accuracy and capability of the equipment.
- (2) This procedure applies to inspection equipment owned and used by the supplier, as well as government furnished inspection equipment, for which the supplier has an obligation to maintain.
- (3) Implementation of Part Three, Chapter 5, will be accomplished by using documents prepared and assembled during the government system

planning phase (par. 2-2-303 g (4)) for the particular quality assurance verification area.

j. The evaluation and verification of the supplier's use of production equipment used for inspection will be conducted as outlined in Part Three, Chapter 6, Evaluation and Verification of Supplier's Use of Production Equipment Used for Inspection.

- (1) This procedure is provided for the evaluation of equipment that is used for both production and inspection.
- (2) Part Three, Chapter 6, shall be applied when equipment such as jigs, fixtures and tool masters, is used as a matter of convenience. It must be applied when equipment is used to produce and control items or components of such a design or structure that they cannot be inspected by the use of inspection equipment after removal of the item from the jig or fixture.
- (3) This procedure applies to supplier owned production equipment, as well as government furnished production equipment or production equipment acquired for government account, which is used as a media of inspection.
- (4) Implementation of Part Three, Chapter 6, will be accomplished by using documents prepared and assembled during the government system planning phase (par. 2-2-303 g (5)) for the particular quality assurance verification area.

k. The evaluations determined as a result of the implementation of the procedures referenced in g, h, i and j above, will have a direct bearing on the overall evaluation of the supplier's quality program. These procedures place special emphasis on certain important functions and provide uniform methods for their evaluation.

l. The QAREp shall take immediate action to require the elimination of all unsatisfactory conditions in the supplier's system as soon as they are detected. All deficiencies shall be entered on AMC Form 1178. Each deficiency or unacceptable condition will be rated as serious or trivial and acted upon as follows:

- (1) For serious deficiencies, issue an AMC Form 1176, Corrective Action Record, and record a brief description and the number of the AMC Form 1176 on AMC Form 1178. Take necessary on-the-spot corrective action. Serious deficiencies are those that are likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.

- (2) For trivial deficiencies, take on-the-spot corrective action; provide for follow-up and record on AMC Form 1178. When a trivial deficiency is repetitious or actions taken by the supplier are inconclusive, consideration should be given to advisability of issuing an AMC Form 1176. Trivial deficiencies are other than serious and are not likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.

m. The corrective action to be taken by the QAREp for the quality program is as follows:

(1) Serious deficiencies:

- (a) Discontinue acceptance of the product or equipment until the supplier has taken action to:
 - 1. Remove all nonconforming material or materiel from his system.
 - 2. Correct the conditions that allowed for his determination that nonconforming material or materiel was conforming.
- (b) When more advantageous to the government, perform sufficient inspection to assure that all materiel accepted is at least equivalent to the quality requirements of the contract or order.
- (c) Refer the problem to the officer administering the contract or order when:
 - 1. The supplier does not take immediate action to remove all nonconforming material or materiel from his system.
 - 2. The supplier does not institute immediate action to preclude recurrence of the condition.

(2) Repetitive trivial deficiencies:

- (a) When the supplier refuses to take necessary corrective action, take action with the supplier, as directed by the officer administering the contract or order.
- (b) When directed by the administering officer, discontinue acceptance of the product or equipment affected.
- (c) When more advantageous to the government, perform sufficient inspection to assure that all materiel accepted is at least equivalent

to the quality requirements of the contract or order.

n. After all required system evaluation results forms have been prepared for the various areas, activities, functions or operations, prepare an AMC Form 1179, System Evaluation Summary. The first entry shall be for the adequacy evaluation of the general procedures. Entries that follow will be for all other areas, functions or activities.

o. Monthly, post results of all system evaluation activity accomplished during the month to AMC Form 1179.

p. Upon each change in the procurement requirements, involving engineering documentation, the QAREp shall evaluate the supplier's procedure for controlling the quality of the item, assembly, subassembly, component, material or process involved, to determine adequacy of the supplier's procedure to comply with the changed or added requirement.

q. Supplier conformance to new or revised requirements shall be evaluated by the QAREp upon inspection of the first item which includes the change or addition, at the first inspection point, to determine:

- (1) That the supplier's inspection or quality control procedures, including purchasing data, is revised as required to provide adequate instructions to control the quality of material manufactured, processed or purchased, to the revised requirement of the drawing, specification, standard, supplementary quality assurance provisions, or other government approved document.
- (2) That the supplier's procedure incorporates all changes specified on the Engineering Change Request/Engineering Order (ECR/EO) which were incorporated into the procurement documents.
- (3) That inspection equipment to perform inspection of the characteristics is adequate for the purpose, including modification when required. Calibration of the equipment shall also be checked at this time for modified equipment to assure initial calibration has been accomplished. Conformance to calibration schedules should be checked for all equipment involved at each verification inspection. However, special emphasis shall be placed on initial calibration of new or modified inspection equipment.

r. In those instances in which the supplier's procedures are not current, the QAREp shall not attempt to continue to perform acceptance inspection of the material involved until proper corrective action has been accomplished.

s. The instructions for completing forms used for system evaluation are contained in Part Five, Verification Recording Instructions.

2-2-401. Inspection equipment. a. The QARep will make maximum use of the supplier's inspection equipment. The QARep is responsible for assuring the accuracy of supplier's final inspection equipment prior to use. The accuracy of the equipment shall be certified by qualified personnel; either the QARep, the supplier if an acceptable calibration system is being used, an authorized commercial laboratory or by government metrology personnel.

b. Government supplied inspection equipment shall be maintained as required by AMCR 715-508, Volume I.

2-2-402. Preproduction, initial production and first piece inspection. a. Preproduction or initial production samples are frequently a requirement of the procurement documents. In those cases where the requirement is not definitively stated, the QARep will perform first piece inspection, i.e., inspection of the first item, or representative sample, produced and presented for government acceptance.

b. The QARep shall consider recommending a waiver of the preproduction or initial production inspection to the quality assurance element when procurement is a continuation of a contract and past history has been satisfactory. The waiver will be for the entire sample or for a reduction in quantity. Likewise, first piece inspection will be omitted under similar circumstances.

c. Assistance of specialists, such as metrology personnel, materiel and special process specialists, etc., is particularly important during the first inspection of material on a contract. The QARep is responsible for arranging for this assistance.

d. The supplier will be requested to furnish a copy of his inspection report. The report shall include, as a minimum:

- (1) Supplier's name and address.
- (2) Contract, purchase order or work order number.
- (3) Nomenclature.
- (4) Drawing number or part number and revision.
- (5) Specification number and revision.
- (6) A listing of each characteristic inspected.
- (7) Method of inspection.

- (8) Results for each characteristic inspected. When numerical results cannot be given, results will be shown as satisfactory or unsatisfactory.
- (9) Information relating to manufacturing problems and any other problems encountered.
- (10) Required statements of findings.

e. The QAREp shall review the requirements of the procurement documents and the report furnished by the supplier and will proceed with inspection when the supplier's report indicates that material is satisfactory. The inspection will include all characteristics selected for inspection during initial planning, special characteristics and tests required by the procurement documents, and as many additional characteristics as is possible to inspect.

f. The QAREp will prepare a report of the results of examinations and tests performed. The report shall be on the appropriate form described in Part Five. Any narrative information required to fully describe the inspection results will also be included.

g. The QAREp will take action with the supplier on all discrepancies. Since the available quantity of samples, in many cases, will be small, it will sometimes be desirable to release preproduction or initial production samples to the quality assurance element, if required, for final inspection with known defects. This information must be included in the inspection report prepared by the QAREp. Before release of defective samples for final inspection, the inspection element shall obtain prior approval from the quality assurance element.

h. When the above inspection has been on a preproduction or initial production sample, the inspection element will:

- (1) Notify the quality assurance element of the availability of the sample.
- (2) Arrange for supplier representation at the final inspection, if desirable.
- (3) Make available to the quality assurance element copies of the supplier's inspection report, the QAREp's report, and copies of any AMC Forms 1176.

i. Upon receipt of final inspection results from the quality assurance element, the inspection element will immediately notify the QAREp and the officer administering the contract or order. The officer administering the contract will immediately notify the supplier of the results. Notification will be by the most rapid means available. In all cases, formal notification to the supplier must be confirmed by a written communication.

- (1) Formal written notification will be made whether the sample is accepted, conditionally accepted, or rejected.
- (2) If conditionally accepted or rejected, the supplier will be notified of all defects or deficiencies. He will also be advised of any requirement for resubmission of a sample.

j. Under the following circumstances, the QAREp, through the inspection element, will obtain from the quality assurance element, instructions regarding the submission of another sample when:

- (1) The supplier, for any reason, changes his method or process of manufacture.
- (2) The supplier changes the material from that used in the original initial production sample.
- (3) The supplier changes his source of supply of finished parts or components.
- (4) The supplier submits, in his initial sample, a component obtained from any source other than that which will be his source of supply for mass production.

k. The QAREp and the supplier can use the sample as a visual and working standard through the life of the contract or order. It is the responsibility of the quality assurance element to arrange for the return of the sample, when the final inspection was conducted at other than the supplier's plant, to the supplier's facility, when practicable. The sample should be shipped as the last item under the contract or order.

2-2-403. Product verification. a. The QAREp shall perform or direct his staff to perform product verification inspection concurrently with system evaluation, using the documents prepared and assembled during the government system planning phase (par. 2-2-303 g (6)) for the particular quality assurance verification area.

b. If, during product verification inspection and during various stages of manufacture and assembly, design or suspected design intent failures are encountered, immediately notify the supplier, the officer administering the contract, and the quality assurance element. Notification will be by telephone or teletype and confirmed by letter.

c. For product verification inspection of critical characteristics, the QAREp will follow the instructions contained in Part Three, Chapter 7.

d. For product verification inspection of major and minor characteristics, the QAREp will follow the instructions contained in Part Three, Chapters 8 through 11, as applicable.

e. Product verification by the QAREp, independent of inspection performed by the supplier, is preferable to combining inspection activities. When independent inspection is impracticable or uneconomical, inspection by the QAREp may consist of witnessing the inspection performed by the supplier. The act of witnessing inspection shall only be performed by personnel capable of performing the examination or test independently.

- (1) When it has been determined that product verification inspection be performed by witnessing the supplier's inspection, the QAREp shall perform as follows:
 - (a) Obtain a copy of the inspection instruction for the item of product to be inspected.
 - (b) Assure the sample is selected at random.
 - (c) Using the inspection instruction, note each examination, test or step in a sequence of operations required to be performed.
 - (d) As the supplier performs the inspection, closely witness each examination and test. If the QAREp determines that the supplier performs inspection and assumes that accurate readings and decisions of conformance are made by the supplier, it shall not be classified as "witnessing."
 - (e) Independent of the supplier, read the measuring equipment to determine if the item meets requirements. The readings may be taken directly from equipment, such as dial indicators, gages for pressures or flow, ammeters or voltmeters, scales for weight, or standard micrometers or height gages. Readings may also be taken from charts, graphs or tapes electrically or mechanically produced by inspection equipment during performance of the inspection.
- (2) Results of the inspection shall be recorded by the QAREp, including the statement "inspection witnessed."
 - (a) In recording results of inspection, the QAREp shall not record a defect or failure to meet a requirement as being found by the QAREp if the defect or defective is properly recognized and recorded by the supplier.

- (b) A defect or failure shall be recorded by the QAREp when:
 - 1. A defect exists in the unit of product after the supplier's inspector has declared the unit conforms to requirements.
 - 2. The supplier's inspector improperly records the defect or defective on supplier records.
- (3) Acceptability of the product shall be determined by the QAREp in accordance with the applicable quality assurance techniques of Part Three being used.
- (4) The quality assurance element or a procurement document may require the QAREp to perform certain examinations and tests. If the requirement is not specified, the QAREp has the authority to perform or witness inspection.
- (5) Some of the conditions causing independent inspection to be impracticable or uneconomical are as follows:
 - (a) Excessive time required to perform the inspection.
 - (b) Large size of an item, requiring special handling equipment.
 - (c) Necessity for expensive or duplicate inspection equipment.
 - (d) A test is destructive and limited quantities of the item are available.
 - (e) A test is destructive and the cost of the item is high.
 - (f) Cost of performing the examination or test is high.
- (6) In witnessing inspection, the QAREp must make decisions of acceptability, independent of the supplier's decisions of conformance, even though the physical conduct of the inspection is performed by the supplier.
- (7) The forms to be used in recording results of inspection shall be the same as those specified in the quality assurance techniques being used. The forms are to be prepared as though the inspection was performed by the QAREp and clearly marked "inspection witnessed."

f. The QAREp must continually record all activities and furnish any data required by the quality assurance element. The QAREp shall record the results of product verification inspection. Instructions for completing product verification forms are contained in Part Five, Verification Recording Instructions.

g. The QAREp should avoid complete reinspection of product after it has been inspected for acceptance. However, if the material is modified, repaired or reworked after original inspection, some inspection is necessary. The amount of inspection shall be sufficient to assure quality and the material to be repaired should be inspected by the QAREp, both before and after the repairs.

- (1) Paragraphs (2) through (7) below, specify the inspection to be performed in verifying the quality of material in two categories:
 - (a) Material inspected by the QAREp to original requirements; subsequently, requirements are changed which necessitates rework, repair or modification.
 - (b) Material found to be nonconforming by the supplier or the QAREp, to be repaired under an approved repair procedure.
- (2) When requirements are changed, the change will be analyzed to determine whether the change will be classified as "rework" or "repair."
- (3) In preparing for the inspection, the QAREp will use documents or information such as the following:
 - (a) The change, modification or work order directing the alteration of the material or equipment.
 - (b) Pertinent drawings, procedures, instructions or quality standards.
 - (c) Approved procedures for repair.
 - (d) Examination or test requirements furnished by the quality assurance element.
- (4) If material is to be repaired, the QAREp will arrange with the supplier for inspection prior to repair as well as after repair. Inspection prior to repair will be for the purpose of determining the following:
 - (a) The material is in the condition for which a repair procedure has been approved.
 - (b) Each deficiency is within any limitations which are a part of the approved repair procedure.
 - (c) There are no other conditions existing, not permitting repair.
- (5) Inspection of repaired material for characteristics not affected by re-

pair, shall be the regular inspection for the plan being used for normal material.

- (6) Duplication of inspection performed prior to modification, repair or rework should be avoided. Characteristics not affected should not be reinspected. In determining the amount and kind of quality verification required, the QAREp shall take the following into consideration:
 - (a) The extent of the modification, repair or rework.
 - (b) The function, process or area affected.
 - (c) Possible damage to integral parts or adjacent items not being altered, including possible damage if the rework or repair procedures are not properly followed.
 - (d) Any special requirements furnished by the quality assurance element.
 - (e) The inspection instruction, classification of characteristics, quality assurance provisions, quality standards, etc., used for the inspection prior to alteration.
- (7) The QAREp will record on the appropriate form or report, information which will include the following details:
 - (a) Positive identification of all characteristics inspected.
 - (b) Tests performed.
 - (c) Deficiencies or nonconformances observed.
 - (d) Disposition of the material.
 - (e) Any on-the-spot corrective action accomplished.
 - (f) Any other information required to record compliance with any special requirements furnished by the quality assurance element.
- (8) Paragraphs (2) through (7) above, do not apply to material which the supplier reworks before offering to the QAREp for inspection and acceptance. The rework performed as a part of normal production processes or as a result of the supplier's own inspection is controlled by the supplier's system and is not subject to the controls of the paragraphs cited.

- (9) The processing and approval of repair procedures will be considered for nonconforming material, which cannot be reworked, found by either the supplier or the QARep. If it is determined that a method of repair is available or can be devised, the deficiency shall be analyzed and placed in one of the following two categories:
- (a) Deficiencies of a nonrecurring nature which are not expected to be repeated. This includes deficiencies caused by isolated circumstances for which positive corrective action can be taken. Requests to repair material in this category will be processed in accordance with AMCR 715-508, Volume I.
 - (b) Deficiencies of a recurring nature, cause for which is inherent in the process or operation and the process or operation cannot be improved. This includes deficiencies in material when the product quality depends entirely on the human element. Repair procedures will be considered for this category of material.
- (10) The QARep shall process requests for approval of repair procedures as follows:
- (a) Review the proposed repair procedure.
 - (b) Add any pertinent comments.
 - (c) Forward to the quality assurance element, through the inspection element headquarters.
 - (d) After return from the quality assurance element, the inspection element shall obtain any administrative approvals required in addition to the technical approval, and forward, through appropriate authority, to the supplier. In the case of an industrial concern, the approval of the officer administering the contract is necessary, and he will notify the supplier of approval. In the case of other suppliers, the approval of the officials directing the operations of the supplier will be required.
 - (e) Material repaired in accordance with an approved repair procedure without restrictions, after successfully passing inspection, shall be treated as conforming material. If restrictions are placed on use of the material, it must be segregated and identified when delivered to the consumer.

2-2-404. Acceptance examination and testing. a. An acceptance test is a test of individual products, or lots of materiel items, which have been submitted for

acceptance to determine conformance of the products or lots with requirements, prior to acceptance.

(1) Acceptance tests cover three general types of tests, in addition to acceptance examination. These are as follows:

- (a) Routine tests, conducted in conjunction with the examinations for acceptance, such as torque test, conductivity test, static balance test, etc.
- (b) Tests which may be performed on a limited number of samples due to the nature of the test, such as salt spray test, drop test, vibration test, etc.
- (c) Specific tests normally performed by the government and not the supplier, such as ballistic testing of ammunition, proof testing of armor plate, missile firing tests, etc.

(2) The QAREp is responsible for:

- (a) Compliance with acceptance examination and testing requirements. This will be accomplished in accordance with quality assurance techniques (Part Three). These techniques provide for compliance with requirements of section 4 of specifications, SQAP's, and any other instructions provided by the quality assurance element.
- (b) The following, when items are of commercial design and acceptance is based upon the supplier's quality testing requirements:
 - 1. Compliance with instructions issued by the quality assurance element.
 - 2. Reporting to the quality assurance element, through the inspection element headquarters, when compliance with instructions is impracticable. The report shall include reasons for inability to comply with instructions for acceptance examination and testing, reasons for inability to comply with the established system in the application of acceptance criteria, and proposals for alternate examinations, tests or application of acceptance criteria.
- (c) Preparation of reports for all acceptance examinations and tests performed.
- (d) The following, when it is required that certain acceptance tests be performed by a testing installation other than the QAREp:

1. Assuring that only lots or quantities of items designated for acceptance tests have been subjected to all other required final acceptance inspection.
 2. Controlling the lot or quantity of items from which the test samples are to be selected.
 3. The random selection of samples.
 4. Action regarding acceptance or rejection, based upon results of tests reported by the testing installation.
 5. Issuance of an AMC Form 1176 to the supplier when reports of test failures or deficiencies are received.
- (e) Reporting to the quality assurance element design or suspected design deficiencies. Notification shall be by telephone or teletype and confirmed by letter.

b. Acceptance examination and testing of an item which is listed on a qualified products list shall not be waived under production contracts or orders. The QARep shall determine acceptability as follows:

- (1) When the product is an end item of procurement, acceptance will be based upon the following:
 - (a) Supplier's inspection records of the examinations and tests.
 - (b) Application of a (2) above.
- (2) When the product is procured by a prime supplier for use in connection with a prime contract or order, acceptance will be based upon the following:
 - (a) Records, properly certified by the prime supplier, of the manufacturer's inspection and tests required by section 4 of the specification.
 - (b) The inspection and tests conducted by the prime supplier in his receiving inspection to verify or support his certification of the manufacturer's record.
 - (c) Application of a (2) above.

c. Acceptance examination and testing of an item that has been examined and tested and determined that it is an "or-equal" item shall not be waived when

being procured under production contracts or orders. The QAREp shall determine acceptability as described in b (1) and (2) above.

d. The QAREp shall issue an AMC Form 1176 in accordance with the quality assurance techniques in use when the inspection is performed.

e. The QAREp shall issue an AMC Form 1176 when tests are performed by another testing installation, and reports of test failures or deficiencies are received.

2-2-405. Special examination and testing requirements. a. Control samples are samples selected for a control test of production items at periodic intervals, performed by the supplier, to disclose any manufacturing deficiencies under the applicable specification. The tests performed are more extensive than routine acceptance tests and also will frequently be more severe.

(1) The QAREp shall be responsible for:

- (a) Selection of the control sample to be tested.
- (b) Assuring that control samples have been subjected to all examinations and acceptance tests, required by specifications, prior to being subjected to the control tests.
- (c) Assuring that all requirements for control tests are satisfied.
- (d) Witnessing tests performed by the supplier. This shall be accomplished in accordance with 2-2-404 d above.
- (e) Recording results of inspection.
- (f) Action, as necessary, to enforce action specified in case of failure.
- (g) Issuing an AMC Form 1176 in case a failure occurs during the control test or a deficiency is found during examination.

1. AMC Form 1176 shall be issued whether the QAREp or the supplier records the failure, or observes and records the deficiencies.

2. A copy of the AMC Form 1176 shall be furnished to the quality assurance element as soon as practicable.

(2) In performing the witnessing of tests that run over an extended period of time, the QAREp will make intermittent checks of the test in operation. The intermittent checks shall be adjusted commensurate with the character of the test and the desired results.

b. A comparison test is a test of random samples of production line items, conducted as a quality assurance measure, to detect any design, manufacturing or inspection deficiencies that may reduce the effective operation of the items by the using agency.

- (1) Although the quality assurance element is responsible for preparing requirements for and the actual testing of comparison samples, the QARep is assigned certain responsibilities.
 - (a) Notification to the quality assurance element in advance of the date the item or items will be at the place designated for comparison testing.
 - (b) Selection of items required for comparison testing. All samples selected for testing will be selected at random from materiel that has been accepted by the QARep.
 - (c) Taking action with the supplier on failures or deficiencies reported by the quality assurance element.
 - (d) Determining if deficiencies reported warrant increasing the level of acceptance inspection when less than the normal level is in effect.
 - (e) When requested by the quality assurance element, furnishing reports on action taken to correct deficiencies.
- (2) The QARep shall issue an AMC Form 1176 for all serious deficiencies reported by the quality assurance element.
- (3) The random sample or samples selected for comparison testing will not necessarily be items that were inspected for acceptance. A random selection may designate a sample for comparison tests from the uninspected portion of a lot that was accepted by sampling techniques. The QARep shall not inspect the samples so selected but shall submit them as is for comparison tests.
- (4) Comparison testing is not sufficient when tests are for interchangeability. The necessary requirements for comparison tests/interchangeability in c below, shall apply when it has been determined that such tests are required.

c. A comparison test/interchangeability is a comparison test performed by interchanging parts of or for one assembly with parts of or for other assemblies.

- (1) The QARep is responsible for:

(a) When interchangeability testing is performed by the QAREp:

1. Selection of items required for testing. All samples selected will be selected at random from lots or quantities of materiel that were subjected to final acceptance inspection and accepted.
2. Taking action with the supplier on all failures attributive to nonconforming product, revealed by the test.
3. Notifying the quality assurance element, through the inspection element headquarters, of failures that are, or are suspected, attributive to design.
4. Determining if deficiencies revealed by test warrant increasing the amount of acceptance inspection when less than normal is in effect.
5. Furnishing reports on all examinations and tests performed, as directed by the quality assurance element.
6. When requested by the quality assurance element, furnishing reports on action taken to correct deficiencies.

(b) When interchangeability testing is performed by another installation:

1. Notification to the quality assurance element, through the inspection element headquarters, in advance of the date the item or items will be at the place designated for testing.
 2. Selection of items required for testing. Samples will be selected at random from materiel that has been accepted by the QAREp.
 3. Taking action with the supplier on failures or deficiencies reported by the quality assurance element.
 4. Determining if deficiencies reported warrant increasing the amount of acceptance inspection when less than normal is in effect.
 5. When requested by the quality assurance element, furnishing reports on action taken to correct deficiencies.
- (2) The QAREp shall issue an AMC Form 1176 for all serious deficiencies found or reported by the quality assurance element.
- (3) Interchangeability tests will be performed at designated intervals to determine if the material will fit and function as specified in the

procurement documents. Generally, however, interchangeability tests will be held when more than one supplier is producing the same item. The parts that make up the item or the item itself shall be selected at random and properly identified under the supervision of the QARep. The material will be forwarded to a designated testing facility where it will be inspected, tested, and disassembled for dimensional inspection. The parts from each unit will be interchanged and reassembled from each predetermined lot. The item will again be tested.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 2
PLAN 2 — QUALITY PROGRAM PROCEDURES

Section V. ANALYSIS OF SUPPLIER AND GOVERNMENT OPERATIONS

2-2-500. Scope. The objectives of these actions are to prevent, or detect and preclude the continuation of unsatisfactory conditions, and to serve as a basis for reduction in government verification efforts.

2-2-501. Purpose. a. Analysis of verification operations shall be employed to insure the continued efficiency of the QAREp and that the verification effort is concentrated on those areas consistent with quality data.

b. Analysis of operations shall also include determining the supplier's effectiveness in formulating and implementing a satisfactory system of control.

c. If the quality assurance element has specified a particular method for analyzing a supplier's performance, either by a quality assurance letter for a particular procurement or by a special requirement included in Part Six, that method shall be used by the QAREp. The following requirements for review and analysis shall not duplicate specified methods. One method only shall be used.

2-2-502. Procedure. a. The QAREp shall systematically analyze all product verification, system evaluation, and corrective action summary forms, and also perform case-by-case analysis of quality data to find shifts or trends that may not otherwise be apparent in summary forms. Included in this analysis is the consideration of supplier's promptness in correcting and precluding nonconformances. The QAREp shall perform the following actions:

- (1) Analyze and evaluate data accumulated daily on AMC Form 1178, System Evaluation Results, to determine effectiveness of the supplier's adherence to his procedures.
 - (a) Evaluate the deficiencies to assure that they are properly identified and on-the-spot actions of the supplier are effective.
 - (b) Determine if follow-up actions reflect timely remedial action by the supplier.
 - (c) Determine if deficiencies found in one area or station require action due to possible adverse effect on other areas or stations.

(d) Assure that an AMC Form 1176, Corrective Action Record, is issued on serious deficiencies.

(2) Analyze and evaluate monthly, data accumulated on the AMC Form 1179, System Evaluation Summary, to determine the effectiveness of the supplier's adherence to his procedures.

(a) Review and analyze the number of recorded inadequacies and the number of AMC Forms 1176 issued during the latest monthly period.

1. Determine if the inadequacies involve procedural elements as having an adverse effect on acceptability of the end item.
2. Determine whether the difference between the number of AMC Forms 1176 issued and the number awaiting disposition action from the supplier warrants further action with the supplier.
3. Determine whether all evaluation actions have been completed, as scheduled and the need for programming unchecked elements for the next evaluation period.

(b) Review and analyze the number of recorded inadequacies and the number of AMC Forms 1176 issued, comparing the latest evaluation results with previous summaries.

1. Determine whether the number of inadequacies for the latest month has changed.
 - (a) If the number of inadequacies has increased, reschedule evaluation action in excess of regular frequency for the particular system element check point until improvement of the condition is observed.
 - (b) If the number of inadequacies has decreased, assure adjustment in evaluation frequency, consistent with the supplier's effectiveness.
2. Determine the necessity for continuing follow-up action when supplier's corrective action is satisfactory.
3. Review and analyze the number of AMC Forms 1176 incomplete and determine whether the extension of time or inaction by the supplier is justified or requires follow-up verification action.
4. Review the evaluation results of the past cyclic verification period

and determine whether unchecked elements require rescheduling or exclusion.

5. Determine the need for adjusting the schedule and frequency of system evaluation for subsequent verifications.
- (3) Review the records evaluation results, accumulated on AMC Form 1023, Record Evaluation Summary, in supplementing the information gained from AMC Form 1179, to ascertain the degree of supplier's conformance to his procedures.

 - (a) Tabulate the number of repetitive, like errors and analyze the seriousness of the observed errors and determine whether corrective action steps have been taken.
 - (b) Determine whether the supplier's corrective action is satisfactory and effective to preclude recurrence or requires follow-up action.
 - (c) Ascertain whether the observed errors involve important acceptance inspection and test characteristics necessitating a meeting with the supplier or issuance of a formal letter.
 - (d) Determine whether the existing records evaluation schedule is adequate or in need of rescheduling, as a result of observed errors.
- (4) Review data generated on AMC Form 1025, Accuracy Inspection Summary, in supplementing the information gained from AMC Form 1179, to ascertain the proficiency of supplier's inspection. This will be accomplished as related to measuring and test equipment, production equipment used in lieu of inspection equipment and the accuracy of supplier's inspection of the product.
- (5) Analyze product verification inspection results accumulated daily on the prescribed recording forms from each quality assurance verification area.

 - (a) Determine that the contents of the inspection records are complete and accurate, reflecting pertinent information of the inspected material, e.g., item identification, nomenclature, specification, date, contract data and material disposition.
 - (b) Determine that the identification of the characteristic, AQL, sample size, quantity and description of defects and degree of inspection (reduced, normal, tightened) are correct and in accordance with specified requirements.

- (c) Determine whether the supplier's disposition or corrective action is satisfactory or warrants additional action.
- (6) Analyze product verification inspection results, summarized monthly, compiled from individual worksheets or summaries.
 - (a) Determine that the contents posted to the summary form contain complete and accurate entries obtained from the individual inspection worksheets, when worksheets are used.
 - (b) Review the number of recorded lot rejections. If the results are considered abnormal:
 - 1. Adjust the degree of verification in accordance with the requirements of the applicable plan.
 - 2. Maintain the effort over the affected area until supplier's corrective action is considered satisfactory.
 - 3. If the supplier refuses to take action, corrective action is considered unsatisfactory or condition is unchanged, recommend suspension of inspection, through supervisory channels, to the officer administering the contract or order.
 - (c) Relate deficiencies with system evaluations for action to employ a more effective system evaluation and supplier corrective action to reduce probability of defective materiel.
- (7) Analyze and evaluate daily, the deficiencies reported on AMC Form 1176 for identifying the type of nonconformance and determine the urgency of action.
 - (a) Ascertain that the posted entries accurately reference the source to which the deficiency is related or observed.
 - (b) Assure that the deficiency is clearly described to preclude misrepresentation of required actions of the supplier.
 - (c) Determine that the type of corrective action to be requested parallels the severity of the deficiency or problem.
 - (d) Analyze the supplier's explanation and determine if the corrective action taken is satisfactory to preclude the reported deficiency from recurring.

- (e) Determine if appropriate follow-up action has been specified to assure that supplier's action is effective in eliminating the unsatisfactory condition.
- (8) Analyze and evaluate the deficiencies reported on AMC Form 1177, Corrective Action Record Summary, to detect abnormal or out-of-control conditions on a monthly basis, or more frequently, to prevent repetitiveness of unsatisfactory conditions.
 - (a) Evaluate the deficiencies and determine if the type and class of deficiency is repetitive or indicative of a trend.
 - (b) Evaluate the number of deficiencies and determine if an excessive number of AMC Forms 1176 have been issued or emanate from a particular quality assurance verification area.
 - (c) Determine if the supplier's remedial actions were effective by comparing verification results and noting any reappearance of like conditions.
 - (d) Determine if the quantity of the repetitive deficiencies involves critical or functional characteristics. Also, if recurring trivial discrepancies require issuing an AMC Form 1176.
 - (e) Assure that the time involved pending supplier's reply on final disposition or corrective action is justified by conditions.
 - (f) Compare supplier's previous record of reported deficiencies against current AMC Form 1177 to determine the amount of verification effort and frequency required at the particular quality assurance verification area.

b. Total effectiveness determination of the supplier's system shall include the analysis of quality data received from using activities or other inspection agencies. The QARep shall review reports covering material failure or recommended material improvement action.

- (1) Determine the seriousness and type of reported condition for necessary corrective action.
- (2) Ascertain the supplier's intent or proposed action regarding the cited condition.
- (3) Determine the kind and amount of verification checks that are required at the appropriate quality assurance verification area.

c. The QARep shall employ reduced verification actions in quality assurance verification areas whenever evidence from quality data analysis indicates satisfactory supplier control.

d. In summation of the analysis performed in a and b above, unresolved or recurring quality problems shall be brought to the attention of the supplier. This will be accomplished by formal review with responsible management personnel of the supplier.

e. The QARep shall notify his supervisor and request appropriate action on all problems of a major or serious nature that cannot be resolved in a timely manner. Product deficiencies attributed to design or suspected design failures shall be reported, through appropriate channels, to the quality assurance element.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 3
PLAN 3 – SHORT TERM PRODUCTION PROCEDURES

Section I. GENERAL

2-3-100. Scope. a. This chapter prescribes the technical quality assurance actions by personnel of inspection elements for short term production contracts or purchase orders when neither a documented inspection system nor a documented quality program is required. This includes all small purchases. It also includes contracts or purchase orders where the expected number of lots or submissions of materiel, for acceptance, will not provide sufficient quality data to permit possible implementation of minimum product verification inspection by the QARep.

- (1) This plan has been designed primarily for those short term production contracts or orders for commercial items, proprietary items, etc., where no definitive quality assurance provisions are contained in the contract or order and the proof of item acceptability is determined by product verification inspection.
- (2) This plan is also intended for use on modified commercial items or military items, contracts or orders of short duration, requiring the supplier to perform limited simple technical inspection where small production quantities or low unit dollar value items are involved and the supplier must maintain simple inspection records.

b. When a supplier is furnishing materiel on contracts or orders requiring a documented system, the supplier may control the quality of short term production items under that system. The QARep will then use the plan applicable to that system.

c. If the volume of short term production contracts or orders results in the submission of ten lots within a three month period, the QARep will consider implementation of Plan 4, Long Term Production Procedures. Plan 4 allows grouping of like items and progression to reduced and minimum product verification inspection at the more stable supplier's facility when quality of product consistently meets requirements. Plan 4 requires the QARep to request the supplier to document his system. Until approval of a documented system, the QARep will continue to use this plan.

d. When the supplier is a warehouse, jobber or vendor having no manufacturing facilities, c above, is not applicable.

e. Whether contracts or orders are handled individually, collectively or in

conjunction with other plans in this regulation, evidence of quality assurance actions shall be included in the contractual files.

2-3-101. Inspection planning. a. Each procurement package will be reviewed in detail and the QARep will implement all applicable portions of this plan. Any deviations from this plan shall be definitively specified in writing when the procurement documents are furnished the QARep or included as a special requirement by the commodity command in Part Six of this regulation or when specific instructions are received from the quality assurance element at any time.

b. Inspection planning must be complete and, when required, approved by the QARep's immediate supervisor, or higher echelons, prior to submission of the first piece sample for inspection, or inspection for acceptance.

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PLAN 3 — SHORT TERM PRODUCTION PROCEDURES

Section II. GOVERNMENT SYSTEM PLANNING

2-3-200. General. a. The QARep will develop the verification plan immediately after the preproduction conference. If a preproduction conference is not held, the verification plan will be developed during the initial review of the procurement documents.

b. The QARep will solicit the assistance of inspection element specialists, such as metal processing, metrology, packaging and supervisory personnel, when needed.

c. The QARep will plan to perform the required product verification following the system evaluation prescribed by this plan.

2-3-201. Verification plan. a. The development of the verification plan by the QARep will be predicated upon review of the following:

- (1) Contractual or procurement document.
- (2) Item or detailed and special process specifications.
- (3) Drawings.
- (4) SQAP's.
- (5) Special requirements of major subordinate commands and other agencies.

b. The verification plan will include:

- (1) Evaluation of supplier's inspection records, to determine that they will contain the necessary information when properly completed.
- (2) Approval of special process procedures, equipment or personnel when such approvals are required by specification.
- (3) Concurrently with (1) and (2), a determination of the amount and type of product verification inspection to be conducted, based upon item complexity and contract quality provisions.

(4) Recording results of system evaluation and product verification.

c. In case of critical items or certain examinations and tests requiring advanced techniques, the QARep will request, through channels, the assistance of specialists of the quality assurance element.

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Section III. QUALITY ASSURANCE OPERATIONS

2-3-300. System evaluation. a. Evaluation of a supplier's system is the responsibility of the QAREp. This will be accomplished to assure that the supplier complies with all technical requirements outlined in the procurement documents which are the supplier's responsibility. System evaluation, when applicable, will include, but not be limited to, the following items:

- (1) Inspection records.
- (2) Inspection equipment.
- (3) Special processes.

b. The QAREp shall determine if the supplier's inspection records are available and have been properly completed.

- (1) The supplier's inspection records, supported by a list of characteristics or other identifiable means of determining the characteristics inspected, shall provide the following information:
 - (a) Nomenclature of the item.
 - (b) Drawing and specification number.
 - (c) Contract or order number.
 - (d) When sampling is performed:
 1. Sampling plan.
 2. AQL's or AOQL's used.
 3. Lot size.
 4. Sample size.
 5. Acceptance and rejection criteria.

- 6. Identity of defects or defectives found.
 - (e) Results of inspection.
 - (f) The date inspection was performed.
 - (g) Identity of the inspector performing inspection.
- (2) Records of inspection equipment will be maintained for each piece of inspection equipment, if required, reflecting:
 - (a) Identity.
 - (b) Dates of inspection and calibration and identity of person performing the calibration.
 - (c) Results of inspection and calibration.
 - (d) Date and description of repairs or modifications.
 - (e) Name of commercial calibration laboratory, if applicable.
- (3) The supplier shall have available the statements of findings of materials, when required.
- (4) When contractual documents require material be procured from a vendor on a qualified products list, the supplier shall have a packing slip or shipping document as evidence that the material was received from a qualified vendor.
- (5) When required, tests or examinations are performed at a subsupplier's plant, records furnished to verify that the inspection was performed must be authenticated by a qualified prime supplier representative.
- (6) The QARep will determine that the amount of inspection performed by the supplier is adequate when:
 - (a) Product inspection conducted by the QARep as required by 2-3-301 below, reveals that only conforming material is presented to the government for acceptance.
 - (b) Supplier's inspection records reveal that action was taken by him to remove defective material when his inspection results reveal poor quality.

c. The supplier, as required, will provide, maintain, and use inspection equipment to accurately measure and test supplies under procurement.

- (1) The QAREp will make maximum use of the supplier's inspection equipment. The QAREp is responsible for assuring the accuracy of supplier's final inspection equipment prior to use. The accuracy of the equipment shall be certified by qualified personnel; either the QAREp, the supplier if an acceptable calibration system is being used, an authorized commercial laboratory or by government metrology personnel. When only standard measuring equipment, such as micrometers, vernier calipers, plain plug gages is involved, simple economics requires that government inspection equipment, normally carried by the QAREp, be used rather than certifying the supplier's inspection equipment.
- (2) Government supplied inspection equipment shall be maintained as required by AMCR 715-508, Volume I.

d. When specifications require government approval of process procedures, the prime supplier will be responsible for furnishing such procedures. When the supplier subcontracts work to be performed under such specifications, the procedures required shall be properly authenticated by a responsible official of the prime supplier.

- (1) The QAREp shall determine if the process requires:
 - (a) Certification of personnel.
 - (b) Certification of equipment.
 - (c) Written procedures.
 - (d) Workmanship samples.
- (2) When certifications or written plans of special processes are required, the supplier must have available evidence that these requirements are satisfied.
- (3) Special processes include, but are not limited to, welding equipment and personnel, heat treating, packaging, electroplating and various forms of nondestructive testing.

e. The QAREp shall take immediate action to require the elimination of all unsatisfactory conditions in the supplier's system. All deficiencies shall be entered on AMC Form 1182, Verification Record - Short Term Production. Each deficiency or unacceptable condition will be rated as serious or trivial and acted upon as follows:

- (1) For serious deficiencies, issue an AMC Form 1176, Corrective Action Record, and record a brief description and the number of the AMC Form 1176 issued on AMC Form 1182. Take necessary on-the-spot action. Serious deficiencies are those that are likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.
- (2) For trivial deficiencies, take on-the-spot corrective action and provide for follow-up. Record on AMC Form 1182. When a trivial deficiency is repetitious or actions taken by the supplier are inconclusive, issue an AMC Form 1176. Trivial deficiencies are other than serious and are not likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.
- (3) If the supplier refuses to take action, corrective action is considered unsatisfactory or condition is unchanged, recommend suspension of inspection, through supervisory channels, to the officer administering the contract or order.

2-3-301. Product verification. a. The QARep will not conduct product verification inspection until all elements of the supplier's system are found to be acceptable. Records generated by the supplier, pertaining to inspection results, shall be available and determined adequate prior to each product verification inspection.

b. When a supplier is a new producer of government materiel, or an item is complex or has never been produced before, the QARep will perform first piece inspection, i.e., inspection of the first item, or representative sample thereof, produced and presented for government acceptance. Where costly set-ups or time factors are involved, the supplier may be allowed to present the item for specific quality characteristic inspection, during various stages of manufacturing or process. Upon rejection of a first piece sample, the QARep shall issue an AMC Form 1176. The QARep shall not perform subsequent inspection of another sample until the supplier has proven effective corrective action has been accomplished.

c. The QARep will perform product verification inspection throughout production, immediately following system evaluation.

d. When definitive instructions are specified in the contract or order, the QARep shall confine the selection of characteristics of the product to necessary inspections to be performed. The type and amount of inspection shall be in accordance with quality requirements of the contract.

- (1) Perform the examinations specified.
- (2) Perform the tests required.

- (3) Record inspection performed, defects observed and results of inspection on appropriate forms referenced in 2-3-302 below.

e. Prior to performing product verification inspection, the QARep will determine whether the item or items under consideration fall within the category of material outlined in paragraph 2-3-100 a (1) or (2).

f. If the material belongs in the category of 2-3-100 a (1), i.e., commercial or proprietary items, the QARep will, as a minimum:

- (1) Inspect for the following numbered characteristics: 1. Type and kind. 2. Quantity. 3. Damage. 4. Operability if readily determinable. The numbers will be used for identifying the characteristics. Use, unless otherwise specified, an AQL of 1.0% and Part Three, Chapter 9 of this regulation.
- (2) Inspect packaging and marking as specified in the procurement document and Part Three, Chapter 9.
- (3) Record inspection results of (1) and (2) above, individually on AMC Form 1182. Packaging and marking may be recorded on the same form as product, or on a separate AMC Form 1182. AMC Form 1181, Verification Check List, is not required unless additional characteristics are specified by the quality assurance element or the inspection element.

g. Material falling in the category of 2-3-100 a (2), i.e., modified commercial items, or simple military items, will be inspected as follows:

- (1) When there are no definitive quality assurance provisions, the QARep will use the supplier's acceptable inspection instructions. The QARep will:
 - (a) Determine the adequacy of the supplier's instructions by considering the following:
 1. Complexity and intended use of the item.
 2. Characteristics affecting assembly, operation and interchangeability.
 3. Type and amount of inspection, i.e., 100% or sampling by variables or attributes for defects, defectives or defects per hundred units.
 4. Type of inspection equipment.

- 5. Acceptable quality level (AQL).
- 6. Acceptance and rejection criteria.
- (b) Select the important characteristics and record them on AMC Form 1181.
- (2) When there are no definitive quality assurance provisions or supplier's inspection instructions, the QAREp will:
 - (a) Request the supplier to provide instructions on future contracts or orders.
 - (b) Determine characteristics to be inspected, based on:
 - 1. Dimensions involving interchangeability.
 - 2. Functional tests.
 - 3. Specific process requirements.
 - 4. Characteristics that could result in failure or materially reduce the usability of the unit of product for its intended purpose.
 - (c) List characteristics to be inspected on AMC Form 1181.
- (3) When the supplier is performing 100% inspection, the QAREp shall perform product verification inspection as follows:
 - (a) Select the appropriate sampling plan described in Part Three of this regulation.
 - (b) Assign the acceptable quality level by characteristic; .25% for majors; .40% for minors.
 - (c) Inspect critical characteristics in accordance with Part Three, Chapter 7.
 - (d) Inspect major and minor characteristics in accordance with the applicable sampling standard, Part Three, Chapters 8 through 11.
 - (e) Record the results of inspection on the appropriate forms for the applicable sampling plan.
- (4) When the supplier is authorized to perform sampling, the QAREp will:

- (a) Use the supplier's approved acceptable quality level, as indicated, for the characteristics.
- (b) Use the acceptance and rejection criteria, as indicated in the supplier's inspection instructions.
- (c) Inspect critical characteristics in accordance with Part Three, Chapter 7.
- (d) Inspect major and minor characteristics in accordance with the applicable sampling standard, Part Three, Chapters 8 through 11.
- (e) Record the results of inspection on the appropriate forms for the applicable sampling plan.

h. If, during product verification inspection and during various stages of manufacture and assembly, design or suspected design intent failures are encountered, the QAREP will immediately notify the supplier, and through supervisory channels, the officer administering the contract or order, and the quality assurance element. Notification will be by telephone or teletype and confirmed by letter.

2-3-302. Verification recording forms. a. The QAREP will record the results of each system evaluation and product verification inspection on AMC Form 1182, Verification Record - Short Term Production. When an assigned acceptable quality level is by characteristic, i.e., as required by 2-3-301 g (3) above, AMC Forms 1188, Worksheet for Attributes Inspection - AQL per Characteristic, 1189, Summary Record Attributes Inspection - AQL per Characteristic, 1190, Worksheet for Variables Inspection, or 1191, Summary Record for Variables Inspection, will be used for recording product verification. When these forms are used, spaces 12 through 23 of AMC Form 1182 will not be completed. The form that is used will be attached to the AMC Form 1182. When there is more than one lot for an individual contract or order, either AMC Form 1189 or AMC Form 1191, as applicable, will be attached to the AMC Form 1182. It will not be necessary to retain the worksheets when summary forms are used.

b. An AMC Form 1183, Supplier Quality History, shall be maintained for each supplier. When a supplier is furnishing materiel in the category of 2-3-100 a (1) and (2) an AMC Form 1183 will be maintained for each category. Evaluation for quality assurance actions will be by each category. Evaluation by category is essential so that decisions on actions to take, such as use of minimum inspection, will be based on the category, i.e., "condition, quantity and kind" or "simple technical inspection" rather than on a mixture of the categories.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 4
PLAN 4 — LONG TERM PRODUCTION PROCEDURES

Section I. GENERAL

2-4-100. Scope. a. This chapter prescribes the technical quality assurance actions required by personnel of inspection elements when a formal documented system, by the supplier, for the control of quality, is not required by the procurement documents.

b. This plan has been designed primarily for use where the supplier has a long term production contract or order or a volume of short term production contracts or orders that collectively amount to long term production. Long term production contracts or orders are those where the expected number of lots or submissions of material for acceptance will provide sufficient quality data to permit possible implementation of minimum product verification inspection by the QARep. It does not apply when a documented system is required by the procurement documents, i.e., MIL-I-45208, Inspection System Requirements, MIL-Q-9858, Quality Program Requirements.

c. This chapter is for use under the requirements of paragraph 5 (e), General Provisions (Supply Contract), Standard Form 32, or equivalent requirement. This plan will be effective when the supplier provides and maintains a documented system, describing his operations. This will be accomplished by requesting the supplier to document his system for the control of quality.

d. Each procurement document shall be reviewed in detail and all applicable portions of this plan shall be followed. Those portions of this plan which have been modified or a specific application specified on an individual procurement basis by the responsible procuring activity will be substituted. Such deviations from the established plan shall be specifically specified in writing before the procurement documents are furnished the QARep or included as a special requirement of major subordinate commands or other agencies, as contained in Part Six of this regulation.

2-4-101. Inspection planning. a. The development of the government verification plan must be done concurrently with the development of general and detailed procedures or instructions by the supplier (par. 2-4-200). This concurrent development is necessary so that the verification plan will be compatible with the supplier's methods, processes, inspection stations, etc.

b. The verification plan must be complete and approved by the QARep's immediate supervisor, or higher echelons, no later than the time the initial production

sample or first piece is ready for inspection.

2-4-102. System evaluation and product verification schedules. a. System evaluation and product verification inspection will be reduced from initial frequency when the following requirements are satisfied:

- (1) Data indicates adequate control of quality by the supplier.
- (2) Supplier's corrective action is effective in precluding recurrences of unsatisfactory conditions.

b. System evaluation review and positive action to require the supplier to take corrective action will be intensified from initial efforts when any one or all of the following conditions occur:

- (1) Data indicates inadequate control of quality by the supplier.
- (2) It is necessary for the QARep to tighten inspection.
- (3) Supplier's corrective action is ineffective in precluding recurrence of unsatisfactory conditions.

c. The QARep will schedule unannounced evaluations covering each area, function or operation of the supplier's system at the time of the manufacture or receipt of first items, but no later than immediately after initial production or first piece inspection of the end item. Scheduling will be a continual function with increased effort when there is evidence of, or it is suspected that the supplier is not conforming to his system. Likewise, efforts will be decreased when the supplier is conforming to his system and the system is effective.

- (1) The schedule for system evaluation of an area, function or operation shall be adjusted as indicated by results of other evaluations and verifications conducted. For example, during product verification an unusual number of defective items were found which were caused by a breakdown in the control of measuring equipment.
- (2) Unannounced evaluations, covering each area, function or operation of the supplier's system, must be made at least every 90 days. However, the effort in this area must be continual and trouble spots evaluated as frequently as necessary until effective corrective action is taken.

d. The QARep will perform product verification inspection in accordance with the government verification plan. For items of a complex nature, the QARep will perform in-process product verification inspection only when quality of the item

cannot be determined by verification inspection of the completed item.

2-4-103. Relationship of QAReps with headquarters staff and commodity command specialists. a. The QARep will arrange for assistance of inspection element specialists, such as quality assurance, packaging, special processes, metrology, etc., as required.

b. The QARep will make available his system and product verification plan for review by service segments of inspection element headquarters, and upon request, the quality assurance element.

c. The inspection element headquarters will assist in the initial evaluation of new suppliers and perform subsequent unannounced evaluations at least every six months. These evaluations will be in addition to evaluations conducted by the QARep; however, will be performed as an assistance to the QARep in assuring that the supplier's system is effective and that the QARep is adequately performing the evaluation.

d. The QARep will report any design or suspected design deficiencies encountered to the officer administering the contract or order and the quality assurance element, through supervisory channels.

PART TWO
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PLAN 4 — LONG TERM PRODUCTION PROCEDURES

Section II. SUPPLIER OBLIGATIONS

2-4-200. Supplier system requirements. a. The supplier will comply with the following minimum acceptance system control requirements on each contract or purchase order to insure that his system complies with paragraph 5 (e) of General Provisions (Supply Contract), Standard Form 32, or equivalent requirement.

- (1) Performance of all required technical inspection.
- (2) Maintenance of inspection records.
- (3) Furnishing evidence of approval (preproduction sample, special process, etc.).
- (4) Furnishing applicable special process procedures.
- (5) Certification of "equal" status.
- (6) Preservation, packaging, packing, identification and marking, as applicable.
- (7) Inspection equipment control.

b. The supplier shall be requested to upgrade his inspection system beyond the minimum requirements stated in a above. Collectively, the documented procedures should cover and dovetail all essential elements of the supplier's operations. This upgrading should have as a goal an inspection system satisfying the requirements of MIL-I-45208.

2-4-201. System documentation. a. Paragraph 5 of Standard Form 32 requires that the supplier shall, as a minimum, provide and maintain records of all inspection performed and made available to the government representative for review and evaluation or other equivalent requirements, as specified.

b. The supplier shall be requested to prepare the documentation of his system to include the following:

- (1) General procedures outlining supplier's control, to be performed on a

particular or various procurement documents, for insuring product quality throughout all phases of operations.

- (2) Detailed procedures or instructions for each station, area, function or operation. These detailed procedures or instructions will be based upon contract requirements, including quality assurance provisions, drawings, specifications, SQAP's or definitive inspection instructions listing characteristics or possible defects. The supplier's procedures which differ from those specified in the technical requirements will be considered adequate when they provide, as a minimum, quality assurance equivalent to that required by the technical requirements. In case of disagreement, the inspection procedures shall strictly adhere to the technical requirements.

2-4-202. Operations and plant layout. a. The supplier will be required to:

- (1) Assure that his processes, procedures and written descriptions comply with requirements.
- (2) Assure that his procedures and instructions are adequately implemented by his personnel.
- (3) Assure that his subsuppliers are fully qualified to operate and maintain the processes and procedures.
- (4) Require his subsuppliers to furnish objective evidence of compliance with procurement requirements and quality of the product.
- (5) Conduct periodic verification of evidence submitted by subsuppliers.
- (6) Affix a signature of an authorized official to any documents furnished by subsuppliers to certify approval and authenticity.
- (7) Furnish all pertinent information to the QAREP for review.

b. The supplier will be requested to provide a plant layout or flow chart indicating his areas, inspection stations and operations to be used during production. If the supplier does not provide a plant layout or flow chart, the QAREP will prepare a plant layout for determining quality assurance verification areas.

2-4-203. Subsupplier operations. The prime supplier is responsible for controlling the quality of the materiel, including preservation and packaging, supplied by the subsupplier. If the subsupplier's operations are extensive, the prime supplier will require that the subsupplier have a documented system. The prime supplier is responsible for furnishing an acceptable description of the subsupplier's system.

The prime supplier shall evaluate the subsupplier's system to verify compliance and to perform sufficient product inspection to verify the subsupplier's findings.

2-4-204. Corrective action. a. The supplier is expected to take prompt action to correct assignable conditions which have resulted or could result in submission to the government, supplies and services which do not conform to requirements.

b. If prompt corrective action is not taken to correct unsatisfactory conditions, the QAREp shall advise the officer administering the contract or order, through appropriate channels.

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CHAPTER 4
PLAN 4 — LONG TERM PRODUCTION PROCEDURES

Section III. GOVERNMENT SYSTEM PLANNING

2-4-300. Initial system evaluation. a. The QAREp shall conduct adequacy evaluation of the supplier's general and detailed procedures or instructions as soon as possible in order that any inadequacies may be resolved prior to the initial presentation of product for acceptance.

b. The general procedures shall be evaluated as soon after the preproduction conference as possible, or when progressing from Plan 3, prior to presentation of product for acceptance by the supplier.

c. The detailed procedures or instructions will be evaluated as soon as they are developed by the supplier for use.

2-4-301. Subsupplier activities. a. The QAREp at the supplier's plant shall review the applicable procurement documents and referenced data to determine the need for and extent of inspection or services to be performed by a QAREp at a sub-supplier's facility. His decision will be made in accordance with AMCR 715-508, Volume I.

b. When the services of an inspection element are required at a subsupplier's plant, Part Two, Chapter 6, Plan 6, Prime - Subinspection Element Actions, is applicable and will be used in conjunction with this plan.

2-4-302. Quality assurance verification areas. a. The QAREp shall determine where each action covering the control of quality will be performed. If the supplier has not furnished a plant layout or flow chart with the information, the QAREp will prepare a chart.

b. The supplier's activities will be divided into quality assurance verification areas. The division into areas will consider the nature of the activity to be verified and the anticipated workload in each area. These areas will be used for both system and product verification.

c. Detailed instructions, together with records, charts, schedules, etc., will be combined and available in a book, folder, or jacket file for all quality actions to be performed in each quality assurance verification area. These documents will be maintained for use in the particular area.

d. For product verification inspection, the quality assurance verification area shall be at the latest practical point that inspection can be performed. Where the end item is an assembly, the following will apply:

- (1) Consider all inspections that can be performed on the final assembly.
- (2) Component parts of the assembly, in support of (1) above, whose characteristics are considered important and which cannot be verified during end item inspection.
- (3) Other inspection of the product based on interchangeability, especially when repair parts may be involved, or safety or functioning is a major consideration.

2-4-303. Verification plan. a. The QAREp shall start the development of the verification plan he will use no later than immediately after the preproduction conference. If a preproduction conference is not to be held, the plan shall be started immediately after the procurement documents are received and reviewed as required by AMCR 715-508, Volume I.

b. The QAREp will obtain the assistance of supervisory personnel and inspection element specialists, such as metal processing, metrology, commodity and packaging, when needed.

c. In case of critical items or certain examinations and tests requiring advanced techniques, the QAREp will request, through channels, the assistance of specialists of the inspection and quality assurance elements.

d. As the plan is developed, manpower requirements must be established, including numbers necessary and the time phase for assignment.

e. Development of the verification plan for evaluation of the supplier's system and product verification inspection shall be predicated upon review of the following:

- (1) Results of initial planning, prior to the preproduction conference, as specified in AMCR 715-508, Volume I.
- (2) Contractual or procurement documents.
- (3) First piece inspection, predicated on one of the following:
 - (a) New supplier.
 - (b) New and complex item.

- (4) Supplier's material flow chart or plant layout chart.
- (5) Supplier's general and detailed procedures or instructions.
- (6) Quality assurance letters from the quality assurance element.
- (7) Part Six of this regulation.

f. As early as possible in the preparation of the verification plan, determination as to need for subinspection element services at a subsupplier's plant shall be made.

- (1) If it is determined services of a subinspection element are not needed, Plan 6 has no further application in the formulation of the government verification plan.
- (2) When government services are required at a subsupplier's plant, this entire Plan 4 will apply to the QAREp at a subsupplier's plant to the extent specified in the inspection requisition, as well as to the QAREp at a prime supplier's plant.

g. The following procedures will be used when product verification inspection by an inspection element, at a subsupplier's plant, is not justified and a prime supplier elects to control quality by requiring a subsupplier to maintain an effective inspection system:

- (1) The QAREp shall require the prime supplier to:
 - (a) Assure that adequate procedures governing control of quality are implemented by the subsupplier.
 - (b) Review and approve the procedures and make them available to the QAREp for review.
 - (c) Furnish the prime inspection element objective evidence of the controls established and exercised over the subsupplier's inspection system.
 - (d) Inspect, as necessary, upon receipt of the supplies, to assure conformance to requirements of the procurement documents.
 - (e) Adjust the type and amount of receiving inspection, proportionate with quality and amount of controls exercised by the subsupplier.
- (2) The QAREp will plan to perform verification of supplier's accuracy or

product verification based on the quality evidence submitted and the nature of the item.

h. Action required at each supplier's station, area, function or operation shall be analyzed. The following actions will be considered:

- (1) Conformance evaluation, as required by paragraph 2-4-400 f.
- (2) Product verification, as required by paragraph 2-4-403.

i. The QAREp will plan to prepare verification instructions for each quality assurance verification area to include:

- (1) For system evaluation:
 - (a) AMC Form 1178, System Evaluation Results, for recording evaluation results, using inspection system check lists, Part Three, Chapter 2.
 - (b) AMC Form 1180, Record Check List, for evaluating records.
 - (c) Necessary instructions for posting evaluation results to applicable forms.
 - (d) A listing of assemblies or components requiring accuracy inspection. Accuracy inspection shall not be performed on assemblies or components requiring product verification inspection.
 - (e) Use of supplier's detailed procedure or instruction, if specific instructions are not contained in the procurement documents.
 - (f) Provisions for a specific process.
- (2) For product verification:
 - (a) Definitive instructions, indicating acceptance criteria referenced in the procurement documents, e.g., detail item specification, SQAP's, engineering drawings, etc., and type and amount of inspection, including quality assurance techniques to be used, Part Three of this regulation.
 - (b) Instructions for preparation of AMC Form 1181, Verification Check List, using supplier's inspection instructions when definitive instructions are not specified.
 - (c) Determine the inspection required for each quality assurance verifi-

cation area, considering:

1. Production schedules.
2. The method of inspection to be performed.
3. Previous procurement performance.
4. Pre-award survey data.
5. Special processes involved.
6. Any other considerations, as recommended by the commodity command.

j. When definitive instructions are specified in the procurement documents, the QARep shall confine the selection of characteristics of the product to necessary inspections to be performed. The type and amount of inspection shall be in accordance with quality requirements of the procurement documents.

k. When there are no definitive quality assurance provisions in the procurement documents, the QARep will plan to use the supplier's acceptable inspection instructions, as prescribed by 2-4-304, below, in performing product verification inspection or accuracy inspection.

1. Prior to placing the verification plan into operation, the QARep shall:

- (1) Indoctrinate personnel on the requirements of each assigned task.
- (2) Define any special instructions resulting from previous procurement or current directives.
- (3) If action is at a subsupplier's plant, the sub QARep shall enlist the aid of specialists, and request information from the prime QARep, as needed.

2-4-304. Use of supplier's inspection instructions. a. When there are no definitive quality assurance provisions in the procurement documents, the QARep will use the supplier's acceptable inspection instructions. In determining the adequacy of the supplier's instructions, consideration will be given to the following:

- (1) Complexity and intended use of the item.
- (2) Characteristics affecting assembly, operation and interchangeability.
- (3) Type and amount of inspection, i.e., 100% or sampling by variables or

attributes for defects, defectives or defects per hundred units.

- (4) Type of inspection equipment.
- (5) Acceptable quality level (AQL).
- (6) Acceptance and rejection criteria.

b. The QAREp will select the characteristics listed on the supplier's instruction that will be inspected by the government. When the supplier's inspection instructions call for 100% inspection, the QAREp shall plan for product verification inspection as follows:

- (1) Select the appropriate sampling plan described in Part Three of this regulation.
- (2) Select the important characteristics listed in the supplier's inspection instructions and the quality assurance requirements of the procurement documents. Record these characteristics on AMC Form 1181.
- (3) Assign the acceptable quality level by characteristic; .25% for majors; .40% for minors.
- (4) Inspection of critical characteristics in accordance with Part Three, Chapter 7.
- (5) Inspection for major and minor defects in accordance with the applicable sampling standard.
- (6) Record the results of inspection on the appropriate forms for the applicable sampling plan.

c. When the supplier is authorized to perform sampling, the QAREp will plan to:

- (1) Utilize the characteristics listed on the supplier's inspection instructions.
- (2) Use the supplier's approved acceptable quality level, as indicated, for the characteristics.
- (3) Use the acceptance and rejection criteria, as indicated in the supplier's acceptable inspection instructions.
- (4) Select the important inspection characteristics listed. Record selected characteristics on AMC Form 1181.

- (5) Designate 100% inspection for characteristics classified as critical or use the quality assurance technique specified in Part Three, Chapter 7.
- (6) Record the results of inspection on the appropriate forms for the applicable sampling plan.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 4
PLAN 4 — LONG TERM PRODUCTION PROCEDURES

Section IV. QUALITY ASSURANCE OPERATIONS

2-4-400. System evaluation. a. The QARep shall perform or direct his staff to perform an initial system evaluation and subsequent evaluation continually and concurrently with product verification inspection, using the documents prepared and assembled during the government system planning phase (par. 2-4-303 i (1)) for the particular quality assurance verification area.

b. The general procedures, outlining management policy, responsibilities and the limits within which each function will operate, shall be evaluated by the QARep as soon as possible after development by the supplier. Evaluation for adequacy of supplier's documented inspection systems shall be made as follows:

- (1) Compare each item listed in Part Three, Chapter 2, Inspection System Check Lists, with requirements of the procurement documents to determine whether the item or elements of the item are applicable or not applicable. In making this determination, a careful analysis should be made to avoid requirements for unnecessary procedures or instructions, as well as omission of those that are necessary.
- (2) Some procurement documents will have elements peculiar to the product which are not included in the evaluation check lists. These elements shall be added, as required. The additional elements must be specifically covered by requirements of the procurement documents to justify inclusion for evaluation.
- (3) Prepare an AMC Form 1178, System Evaluation Results, for adequacy evaluation of the general procedures and list applicable items from the Inspection System Check List - GP, General Procedures. Forms used to reflect adequacy evaluations shall be reserved to record future adequacy evaluations of general procedures.
- (4) Evaluate the general procedures and record findings on the form. When portions of the written description of the system are inadequate or omitted, each evaluation or resubmission by the supplier will be recorded. General procedures found to be not acceptable will require immediate correction by the supplier.

- (5) When the general procedures are determined to be acceptable, the inspection element may, at its option, initiate a written notice to the supplier of the acceptability of the inspection system. In all cases where the system is considered inadequate, the supplier will be informed of the inadequacies. This may be in writing or by personal contact. In all cases the supplier's system must be acceptable before relied upon to employ minimum inspection as provided in Part Three, Chapter 7 through 11. An over-all acceptance of a system must be contingent upon:

- (a) The supplier's conformance to his procedures or instructions.
- (b) Availability of objective evidence that the system does, in fact, result in an acceptable product.

c. The detailed procedures or instructions that specify what to do, when, where and how to do it, what the decision rules are, and what actions are to be taken when the decisions are made, shall be available to cover each function or operation necessary to the system. These procedures or instructions will be evaluated by the QAREp as soon as they are developed by the supplier for use.

- (1) Detailed procedures or instructions in the item specification or SQAP's can be used by the supplier as inspection instructions. They shall be supported by any additional instructions deemed necessary. These additional instructions shall cover information such as type of inspection, inspection levels, etc., to be used to implement an inspection system.
- (2) When the supplier does not use the detailed procedures or instructions in the item specification or SQAP's, his inspection instructions shall include all inspection requirements and indicate at least an equivalent type and amount of inspection.
- (3) The QAREp shall prepare an AMC Form 1178, and record results of adequacy evaluations of the detailed procedures or instructions for each applicable function or activity, as contained in the check lists of Part Three, Chapter 2.
- (4) Prepare, as necessary, check lists to support items from Part Three, Chapter 2, Inspection System Check Lists. The supporting check lists should relate directly to the particular supplier's system to be evaluated. When prepared, a supplemental check list shall bear the same number as the item listed in the inspection system check list, followed by an "s." Each item on the supplemental check list shall bear the

same designation, followed by a number serially assigned. For example, a supplemental check list for "Process Control" will be designated "5 s" and the items on the supplemental list, "5 s 1," "5 s 2," etc. Elements of supporting check lists shall not be listed directly in column 11 of the system evaluation results form. Only the item number, as listed in the inspection system check list, shall be shown in column 11.

d. The QARep shall be alert for continued adequacy of the initial procedures for the duration of the contract, and of revisions or additions which are made. He shall also be alert for any omissions in the supplier's procedures which were not apparent when the procedures were reviewed for adequacy, prior to production. Continual conformance evaluations will be accomplished to determine if the supplier's procedures or instructions are effective to the extent that their application does assure the degree of quality required.

e. Additional contracts will require evaluations to determine that the documented system, previously considered acceptable, adequately insures control of new requirements.

f. Conformance evaluations will be conducted by the QARep, as follows:

- (1) Determine supplier's conformance to the general and detailed procedures or instructions, predicated on his activities in connection with the items on the inspection system check lists, which were determined to be applicable and adequate.
- (2) Record results of conformance evaluations for each function or activity on AMC Form 1178. Separate AMC Forms 1178 shall be used for recording evaluation of conformance to general and detailed procedures or instructions. The original AMC Form 1178 used for adequacy evaluation shall be reserved for further adequacy evaluation throughout the duration of the contract or order.
- (3) For a documented system based on numerous and successive contracts or orders, the QARep will also prepare AMC Form 1182, Verification Record - Short Term Production. Enter date and notation that conformance evaluation was recorded on system evaluation results form.
- (4) The QARep shall take immediate action to require the elimination of all unsatisfactory conditions in the supplier's system as soon as they are detected. All deficiencies shall be entered on AMC Form 1178. Each deficiency or unacceptable condition will be rated as serious or trivial and acted upon as follows:

(a) For serious deficiencies, issue AMC Form 1176, Corrective Action

Record, and record a brief description and the number of the AMC Form 1176 on AMC Form 1178. Take necessary on-the-spot corrective action. Serious deficiencies are those that are likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.

- (b) For trivial deficiencies, take on-the-spot corrective action, provide for follow-up and record on AMC Form 1178. When a trivial deficiency is repetitious or actions taken by the supplier are inconclusive, consideration should be given to advisability of issuing an AMC Form 1176. Trivial deficiencies are other than serious and are not likely to result in the supplier directly or indirectly concluding that nonconforming material or materiel is conforming.
- (5) When evaluating inspection and testing records, in accordance with Inspection System Check List No. 2, only those records generated by the supplier, recording the results of an act of inspection, will be evaluated, as specified below:
 - (a) The QARep will prepare AMC Form 1180, Record Check List.
 - 1. The master list of characteristics (Part Five, Chapter 5) shall be used in the preparation of individual check lists for a particular record. The master list contains known characteristics which render a record suitable for the recognition and recording of quality of material produced.
 - 2. The number assigned to a characteristic in the master list of characteristics shall be retained and used for the characteristic on AMC Form 1180, if applicable to the record. This system allows ready evaluation of a variety of records or all records in a particular plant, to determine the characteristic or characteristics for which deficiencies most frequently occur. For example, if Characteristic 24, Disposition of Product, is discovered as a deficiency in many records rather than an isolated case of one record, breakdown of the entire system of disposition of product is indicated, as opposed to errors of one employee or one department.
 - 3. A separate AMC Form 1180 shall be established for each record to be evaluated. The characteristics reflected on the master list shall be utilized to establish separate check lists. Only those characteristics that have an adverse effect on the control of quality shall be listed. Only unbiased, impersonal facts shall be considered. Numerical sequence of characteristics, as listed on the master check list, shall be retained when check lists are prepared.

4. If the same record form is used in different areas for different purposes, separate AMC Forms 1180 shall be prepared, and the characteristics listed may or may not be the same. A different check list number shall be assigned so that separate record evaluation summaries will result. If a record form is used for the same purpose in many areas, and it is desirable to evaluate it on a plant-wide basis, only one AMC Form 1180 is necessary. If it is more desirable to evaluate use by area, separate AMC Forms 1180, identified by different numbers and areas, shall be prepared.
- (b) A random sample for each type of supplier's records generated since the last record evaluation shall be selected and evaluated by comparing each characteristic on the record to be checked with appropriate characteristics on the AMC Form 1180.
- (c) AMC Form 1023, Record Evaluation Summary, will be used to reflect record evaluation results for each type of record. Errors are to be tallied and analyzed to determine the degree and extent of errors observed in the sample. All deficiencies shall be called to the attention of the supplier and AMC Form 1176 will be issued when:
 1. Satisfactory on-the-spot corrective actions cannot be concluded.
 2. Previous on-the-spot corrective actions were not effective.
 3. Errors are of a serious nature.
 4. Trivial errors are repetitive.
- (d) The AMC Form 1023 shall be filed with the AMC Form 1178.
- (e) AMC Form 1022, Record Evaluation Results, can be prepared as a worksheet, if desired.
- (f) Each time a record evaluation is performed, an entry will be made on AMC Form 1178 for Inspection System Check List No. 2, opposite the appropriate item or items evaluated.
- (6) When evaluating measuring and test equipment, Inspection System Check List No. 4 will be used for the supplier's final inspection equipment, production equipment used in lieu of inspection equipment and all measurement standards. When the conditions of Plan 7, Calibration System Evaluation Procedures, apply, that plan will be used in con-

junction with this check list.

- (a) Measuring and test equipment shall be grouped into categories of similar types of equipment.
- (b) When the QAREp is scheduling conformance evaluations in this area for the grouped category, consideration shall be given to the following:
 - 1. Quality of the product produced, as determined by inspection results.
 - 2. Complexity of equipment and time required for verification.
 - 3. Effectiveness of previous corrective actions.
 - 4. Conditions under which used.
 - 5. Frequency of use.
 - 6. Performance characteristics of test equipment.
- (c) The QAREp will conduct verification checks for measuring and test equipment, as follows:
 - 1. Select the measuring or test equipment to be verified by type, group or unit.
 - 2. A random sample of measuring or test equipment shall be selected for verification. Sample size will be determined by MIL-STD-105, Table 1, Inspection Level II, Table II-A.
 - 3. Determine from the supplier's inspection instructions, record cards, drawings, or other documents, the characteristics to be verified.
 - 4. Verify the selected characteristics. The QAREp will plan to perform this verification by witnessing examination and tests performed by the supplier when practicable. Witnessing shall only be performed by personnel capable of performing the examination or test independently. When the supplier has an acceptable calibration system, the examinations and tests performed for accuracy checks will not be duplicated to satisfy requirements of 2-4-401 below. Examination and tests performed will be used to serve a dual purpose. This includes initial certification or subsequent checks to verify continued accuracy.

5. Each dimensional, functional or calibration characteristic found out-of-tolerance shall be classed as an error, as follows:
 - (a) If the out-of-tolerance condition is in the direction which would permit submission for acceptance of nonconforming product and where assembly is the obligation of the supplier, permits subsequent assembly, the error shall be classed as serious.
 - (b) When assembly of the item inspected with the inspection equipment is the obligation of the supplier and the out-of-tolerance condition is in the direction which would not permit subsequent assembly, the error shall be classed as trivial.
6. In comparing findings with the last check made and recorded by the supplier on his records, the following will be classed as errors:
 - (a) The supplier's record reflects an out-of-tolerance condition, which verifies findings in 5 above, and the equipment was released for use. This is another error and counted in addition to the error in 5 (a) or (b) above.
 - (b) The error in 5 (a) above, was attributed to the use of master equipment that was faulty or not calibrated. This error will be an additional serious error.
7. Each dimensional or functional characteristic found in error, that does not relate to the final measurement, but requires additional caution shall be recorded and classed as trivial errors also. For example, an indicator gage that sticks occasionally and requires hand manipulation to obtain a reading, a setting screw not properly sealed by the supplier's equipment checker.
8. Record results of each accuracy check on the AMC Form 1024, Accuracy Inspection Worksheet.
9. Post results of each accuracy check to AMC Form 1025, Accuracy Inspection Summary. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.
- (d) The QARep will conduct accuracy checks on production equipment used in lieu of inspection equipment, as follows:
 1. Determine the jig, fixture or tool master to be inspected from the group, without prior notice to the supplier. Care must be exercised

to avoid interruption of the supplier's operation.

2. Using the supplier's instruction, witness each check, measurement or observation made by the supplier.
3. If the instruction requires a sequence of operations to be performed, witness each step in the sequence as it is performed.
4. Take whatever on-the-spot corrective action that is necessary.
5. Record results of each accuracy check on AMC Form 1024.
6. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.
7. If the AMC Form 1025 indicates trends for which corrective action is desirable, in addition to the on-the-spot action taken, prepare and issue an AMC Form 1176.
8. If a piece of equipment is rejected for inspection use, by either the supplier or the QAREp, the QAREp shall require the supplier to investigate the product recently inspected, using the equipment, as well as correcting the equipment.
 - (a) If the product is found to be conforming, no further action is required on inspection of product.
 - (b) If the product is found to be nonconforming, continue investigation of all product inspected by use of the equipment, in reverse order, until all nonconforming product has been located.
9. If there is continued poor inspection of the equipment, as evidenced by the issuance of two or more AMC Forms 1176, without adequate corrective action being taken by the supplier, the QAREp will pursue the following course of action.
 - (a) Notify the supplier that further use of the production equipment for inspection will not be an acceptable element of his system.
 - (b) Notify the supplier that inspection must be performed using measuring instruments, gages, or other inspection equipment.
 - (c) Discontinue acceptance of product until the supplier has pro-

vided inspection equipment or proven the product to be acceptable.

10. Inspection records relating to measuring and test equipment, generated by the supplier, shall be evaluated in accordance with Inspection System Check List No. 2.

(e) Each time the procedures in (6) (c) and (d) above, are used for evaluation of those portions of the supplier's inspection system, an entry shall be made on AMC Form 1178 for Inspection System Check List No. 4, opposite the appropriate item or items evaluated.

(7) The evaluation of inspection by supplier will be determined by use of Inspection System Check List No. 10. In applying this check list, the accuracy of supplier's inspection will be determined.

(a) Accuracy inspection is the evaluation of a supplier's inspection results to determine the supplier's effectiveness in the performance of his inspection. Effectiveness is not only predicated on the supplier concluding that deficient product is conforming, but also the supplier concluding that conforming product is nonconforming.

(b) Accuracy inspection of supplier's inspection results will be restricted to lots, parts, or materials not subjected to scheduled product verification inspection.

(c) When a large number of products are available for verification at a specific station, they may be grouped providing a similarity of type of product is maintained.

(d) The QARep will select the appropriate verification method.

1. Method I is for determining the ability of the supplier's inspectors to conform to inspection instructions. The method is particularly suitable in receiving inspection areas where lot formation cannot be controlled or in other areas where small lots of similar items are inspected at irregular intervals. It is also suitable where statistical techniques ordinarily used for analysis would be impractical due to lack of homogeneity, number of lots processed or other reasons.

2. Method II is for determining the supplier's accuracy in performing tests.

3. Method III is for determining supplier's inspection accuracy when the supplier is using statistical sampling and an estimated process

average can be computed.

(e) When it has been determined to use Method I, the QAREp will conduct accuracy checks as follows:

1. Select at random the lot to be checked, without prior notice to the supplier, if possible.
2. Using the same inspection or quality control instruction, classification of characteristics or list of characteristics used by the supplier, select the characteristics to be inspected and inspect the same sample inspected by the supplier. When 100% inspection is conducted by the supplier, select a sample in accordance with MIL-STD-105, Table I, Inspection Level II, Table II-A.
3. Determine the number of errors made by the supplier on the selected characteristics. An error will be the classifying of a defective item as not defective or a conforming item as defective.
4. Take on-the-spot corrective action.
5. Record results of each accuracy check on AMC Form 1024.
6. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.

(f) When it has been determined to use Method II for determining supplier's accuracy in performing tests, the QAREp will conduct accuracy checks as follows:

1. Select at random the lot to be checked, without prior notice to the supplier, if possible.
2. Using the same test procedure used by the supplier, test the same units tested by the supplier. The number of units to be tested for one check will be determined as follows:
 - (a) When the supplier is testing a sample, test one-half the sample.
 - (b) When the supplier is testing 100%, determine the sample size by MIL-STD-105, Table I, Inspection Level S-4, Table II-A. In the absence of specific inspection lots, a day's production may be considered a lot.

3. If the test procedures require a sequence of operations to be performed, a check of each step in the sequence is required. Each step and measurement will be considered as one characteristic in determining errors.
 4. Determine the number of errors made by the supplier.
 5. Take on-the-spot corrective action.
 6. Record results of each accuracy check on AMC Form 1024.
 7. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.
- (g) When it has been determined to use Method III, the QARep will conduct accuracy checks as follows:
1. Select at random the lot to be checked, without prior notice to the supplier, if possible. Lots found to be nonconforming by the supplier, and reinspected by the supplier, are not to be used under this method.
 2. Determine the first sample size, n_1 , using Part Three, Chapter 4, Figure 4, Sampling Table for Inspection Accuracy - Method III. The minimum sample size for comparing results is five. Sample results may be accumulated from several lots of like items to obtain sufficient number to make a comparison. The accumulation of results to obtain sufficient number to make a comparison will be considered one check.
 3. Select the required sample at random.
 4. Using the same inspection or quality control instruction, classification of characteristics or list of characteristics used by the supplier, inspect the sample.
 5. Obtain the supplier's process average for each class of characteristics. If the supplier is using 100% inspection or changes from sampling to 100% inspection and it is expected that he will continue, Method I shall be considered for use. When 100% inspection by the supplier appears to be temporary, the acceptable quality level for the class may be used in lieu of the supplier's process average. This will require no immediate change in methods.

6. The process average shall be based on the last ten lots inspected or for all lots inspected in two months, whichever computation includes the fewer lots. If there are less than five lots, Method I will be considered for use.

7. Referring to Part Three, Chapter 4, Figure 5, Comparison Table of Inspection Results - Method III, find the process average (percent defective) that is nearest to the supplier's computed process average. Find the S number and the C number listed in the table for the sample. Compare these numbers with the number of defective units found in the accuracy check inspection for each class of characteristics.

- (a) If the number of defectives is zero, or less than the S number, the supplier's inspection is considered effective.
- (b) If the number of defectives is equal to the S number, or is between S and C numbers, poor inspection can be suspected. When poor inspection is suspected, take a second sample equal to the number listed in column n_2 , Part Three, Chapter 4, Figure 4.
- (c) If the number of defectives in the cumulative sample, n_c , is equal to the S number or is between S and C for the cumulative sample, n_c , poor inspection is still probable. Take necessary action in conjunction with the supplier's authorized representative and record on AMC Form 1025.
- (d) If the number of defectives equals or exceeds the C value in the first or cumulative sample, poor inspection is certain. This is considered a serious error on the part of the supplier. Corrective action will be taken with the supplier's authorized representative.

8. Record results of each accuracy check on AMC Form 1024.

9. Post results of each accuracy check to AMC Form 1025. This form can be used for direct recording of results and completion of AMC Form 1024 omitted when operations are under good control and few errors are observed.

(h) The QARep will take on-the-spot corrective action on all errors discovered during accuracy inspection. Action will be taken as follows:

1. Evaluate the error and determine if the error is serious or trivial.

- (a) Serious errors are those that are likely to result in the supplier concluding nonconforming product is conforming.
 - (b) Trivial errors are other than serious and are not likely to result in the supplier concluding nonconforming product is conforming.
2. For serious or repetitive trivial errors, take on-the-spot corrective action and issue an AMC Form 1176.
 3. For trivial errors, take on-the-spot corrective action.
 4. If upon posting to the AMC Form 1025, or simultaneous review of AMC Forms 1024 and 1025, it is determined that an unsatisfactory condition exists, appropriate corrective action shall be taken.
 - (a) For Method I or II, AMC Form 1176 shall be issued when satisfactory on-the-spot corrective action cannot be concluded, or previous corrective actions were not effective.
 - (b) For Method III, AMC Form 1176 shall be issued when cumulative samples were inspected on two consecutive individual checks or more than two checks in a consecutive run of seven checks in which poor inspection was suspected, and satisfactory on-the-spot corrective action cannot be concluded, or previous corrective actions were not effective.
 - (i) Each time accuracy inspection is performed, an entry shall be made on AMC Form 1178 for Inspection System Check List No. 10, opposite the appropriate item or items evaluated.

2-4-401. Inspection equipment. a. The QAREp will make maximum use of the supplier's inspection equipment. The QAREp is responsible for assuring the accuracy of supplier's final inspection equipment prior to use. The accuracy of the equipment shall be certified by qualified personnel; either the QAREp, the supplier if an acceptable calibration system is being used, an authorized commercial laboratory or by government metrology personnel.

b. Government supplied inspection equipment shall be maintained as required by AMCR 715-508, Volume I.

2-4-402. Preproduction, initial production and first piece inspection. a. Preproduction or initial production samples are frequently a requirement of the procurement documents. In those cases where the requirement is not definitively stated, the QAREp will perform first piece inspection, i.e., inspection of the first item, or representative sample, produced and presented for government acceptance.

b. The QAREp shall consider recommending a waiver of the preproduction or initial production inspection to the quality assurance element when procurement is a continuation of a contract and past history has been satisfactory. The waiver will be for the entire sample or for a reduction in quantity. Likewise, first piece inspection will be omitted under similar circumstances.

c. Assistance of specialists, such as metrology personnel, material and special process specialists, etc., is particularly important during the first inspection of material on a contract. The QAREp is responsible for arranging for this assistance.

d. The supplier will be requested to furnish a copy of his inspection report. The report shall include, as a minimum:

- (1) Supplier's name and address.
- (2) Contract, purchase order or work order number.
- (3) Nomenclature.
- (4) Drawing number or part number and revision.
- (5) Specification number and revision.
- (6) A listing of each characteristic inspected.
- (7) Method of inspection.
- (8) Results for each characteristic inspected. When numerical results cannot be given, results will be shown as satisfactory or unsatisfactory.
- (9) Information relating to manufacturing problems and any other problems encountered.
- (10) Required certificates of conformance, statements of findings, etc.

e. The QAREp shall review the requirements of the procurement documents and the report furnished by the supplier and will proceed with inspection when the supplier's report indicates that material is satisfactory. The inspection will include all characteristics selected for inspection during initial planning, special characteristics and tests required by the procurement documents, and as many additional characteristics as is possible to inspect.

f. The QAREp will prepare a report of the results of examinations and tests performed. The report shall be on the appropriate form described in Part Five. Any narrative information required to fully describe the inspection results will also be included.

g. The QAREp will take action with the supplier on all discrepancies. Since the available quantity of samples, in many cases, will be small, it will sometimes be desirable to release preproduction or initial production samples to the quality assurance element, if required, for final inspection with known defects. This information must be included in the inspection report prepared by the QAREp. Before release of defective samples for final inspection, the inspection element shall obtain prior approval from the quality assurance element.

h. When the above inspection has been on a preproduction or initial production sample, the inspection element will:

- (1) Notify the quality assurance element of the availability of the sample.
- (2) Arrange for supplier representation at the final inspection, if desirable.
- (3) Make available to the quality assurance element copies of the supplier's inspection report, the QAREp's report, and copies of any AMC Forms 1176.

i. Upon receipt of results from the quality assurance element of the final inspection, the inspection element will immediately notify the QAREp and the officer administering the contract or order. The officer administering the contract will immediately notify the supplier of the results. Notification will be by the most rapid means available. In all cases, formal notification to the supplier must be confirmed by a written communication.

- (1) Formal written notification will be made whether the sample is accepted, conditionally accepted, or rejected.
- (2) If conditionally accepted or rejected, the supplier will be notified of all defects or deficiencies. He will also be advised of any requirement for resubmission of a sample.

j. Under the following circumstances, the QAREp, through the inspection element, will obtain from the quality assurance element, instructions regarding the submission of another sample:

- (1) When the supplier, for any reason, changes his method or process of manufacture.
- (2) When the supplier changes the material from that used in the original initial production sample.
- (3) When the supplier changes his source of supply of finished parts or components.

- (4) When the supplier submits, in his initial sample, a component obtained from any source other than that which will be his source of supply for mass production.

k. The QARep and the supplier can use the sample as a visual and working aid through the life of the contract or order. It is the responsibility of the quality assurance element to arrange for the return of the sample, when the final inspection was conducted at other than the supplier's plant, to the supplier's facility, when practicable. The sample should be shipped as the last item under the contract or order.

2-4-403. Product verification. a. The QARep shall perform or direct his staff to perform product verification inspection concurrently with system evaluation, using the documents prepared and assembled during the government system planning phase (par. 2-4-303 i (2)) for the particular quality assurance verification area.

b. If, during product verification inspection and during various stages of manufacture and assembly, design or suspected design intent failures are encountered, immediately notify the supplier, the officer administering the contract, and the quality assurance element. Notification will be by telephone or teletype and confirmed by letter.

c. For product verification inspection of critical characteristics, the QARep will follow the instructions contained in Part Three, Chapter 7.

d. For product verification inspection of major and minor characteristics, the QARep will follow the instructions contained in Part Three, Chapters 8 through 11, as applicable.

e. Product verification by the QARep, independent of inspection performed by the supplier, is preferable to combining inspection activities. When independent inspection is impracticable or uneconomical, inspection by the QARep may consist of witnessing the inspection performed by the supplier. The act of witnessing inspection shall only be performed by personnel capable of performing the examination or test independently.

- (1) When it has been determined that product verification inspection be performed by witnessing the supplier's inspection, the QARep shall perform as follows:

- (a) Obtain a copy of the inspection instruction for the item of product to be inspected.
- (b) Assure the sample is selected at random.

- (c) Using the inspection instruction, note each examination, test or step in a sequence of operations required to be performed.
 - (d) As the supplier performs the inspection, closely witness each examination and test. If the QARep determines that the supplier performs inspection and assumes that accurate readings and decisions of conformance are made by the supplier, it shall not be classified as "witnessing."
 - (e) Independent of the supplier, read the measuring equipment to determine if the item meets requirements. The readings will be taken directly from equipment, such as dial indicators, gages for pressures or flow, ammeters or voltmeters, scales for weight, or standard micrometers or height gages. Readings may also be taken from charts, graphs or tapes electrically or mechanically produced by inspection equipment during performance of the inspection.
- (2) Results of the inspection shall be recorded by the QARep, including the statement "inspection witnessed."
- (a) In recording results of inspection, the QARep shall not record a defect or failure to meet a requirement as being found by the QARep if the defect or defective is properly recognized and recorded by the supplier.
 - (b) A defect or failure shall be recorded by the QARep when:
 - 1. A defect exists in the unit of product after the supplier's inspector has declared the unit conforms to requirements.
 - 2. The supplier's inspector improperly records the defect or defective in supplier records.
- (3) Acceptability of the product shall be determined by the QARep in accordance with the applicable quality assurance techniques being used.
- (4) The quality assurance element or a procurement document may require the QARep to perform certain examinations and tests. If the requirement is not specified, the QARep has the authority to perform or witness inspection.
- (5) The forms to be used in recording results of inspection shall be the same as those specified in the quality assurance techniques being used. The forms are to be prepared as though the inspection was performed by the QARep and clearly marked "inspection witnessed."

e. The QARep must continually record all activities and furnish any data required by the quality assurance element. The QARep shall record the results of product verification inspection in accordance with the applicable verification recording instructions (Part Five).

f. When this plan is used at a supplier's plant having a volume of short term production contracts, the same forms used under Plan 3, Short Term Production Procedures, are applicable. The QARep will include records of product verification performed in each contract or order file. When lots are skipped under minimum product verification, the record included will be marked "Skipped per AMCR 715-509, Part Three, Chapter ____ (give the chapter number)." Whenever other product verification forms are used, the same action is required. In all cases where this Plan 4 is used at a supplier's plant having a volume of short term production contracts, AMC Form 1183, Supplier Quality History, Part Five, Chapter 12, shall be maintained. This will be accomplished to determine quality assurance actions, as required or permitted by the technique in Part Three, being used. If AMC Form 1178 is used for recording evaluations, space 10 of AMC Form 1183 may be omitted and the AMC Form 1178 used for quality history in conjunction with product quality history recorded on AMC Form 1183.

2-4-404. Acceptance examination and testing. a. An acceptance test is a test of individual products, or lots of materiel items, which have been submitted for acceptance to determine conformance of the products or lots with requirements, prior to acceptance.

- (1) When the product is an end item of procurement, acceptance will be based upon the following:
 - (a) Supplier's inspection records of the examinations and tests.
 - (b) Compliance with instructions issued by the quality assurance element.
 - (c) Reporting to the quality assurance element, through the inspection element headquarters, when compliance with instructions is impracticable. The report shall include reasons for inability to comply with instructions for acceptance examination and testing, reasons for inability to comply with the established system in the application of acceptance criteria, and proposals for alternate examinations, tests or application of acceptance criteria.
- (2) When the product is procured by a prime supplier for use in connection with a prime contract or order, acceptance will be based upon the following:
 - (a) Records, properly certified by the prime supplier, of the manufac-

turer's inspection and tests required by section 4 of the specification.

(b) The inspection and tests conducted by the prime supplier in his receiving inspection to verify or support his certification of the manufacturer's record.

(c) Application of (1) (b) and (c) above.

b. Acceptance examination and testing of an item that has been examined and tested and determined that it is an "or-equal" item shall not be waived when being procured under production contracts or orders. The QAREp shall determine acceptability as described in a (1) and (2) above.

c. The QAREp shall issue an AMC Form 1176 in accordance with the quality assurance technique in use when the inspection is performed.

d. The QAREp shall issue an AMC Form 1176 when tests are performed by another testing installation, and reports of test failures or deficiencies are received.

e. The forms used in conjunction with the preceding tests are as follows:

(1) Normal inspection recording forms (Part Five).

(2) AMC Form 1176, Corrective Action Record (Part Five).

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 4
PLAN 4 — LONG TERM PRODUCTION PROCEDURES

Section V. ANALYSIS OF SUPPLIER AND GOVERNMENT OPERATIONS

2-4-500. Scope. The objectives of these actions are to prevent, or detect and preclude the continuation of unsatisfactory conditions, and to serve as a basis for reduction in government verification efforts.

2-4-501. Purpose. a. Analysis of verification operations shall be employed to insure the continued efficiency of the QAREp and that the verification effort is concentrated on those areas consistent with quality data.

b. Analysis of operations shall also include a determination of the supplier's effectiveness in formulating and implementing a satisfactory system of control.

c. If the quality assurance element has specified a particular method for analyzing a supplier's performance, either by a quality assurance letter for a particular procurement or by a special requirement included in Part Six, that method shall be used by the QAREp. The following procedure and analysis shall not duplicate specified methods. Only one method shall be used.

2-4-502. Procedure. a. The QAREp shall systematically analyze all product verification, system evaluation, and corrective action summary forms, and also perform case-by-case analysis of quality data to find shifts or trends that may not otherwise be apparent in summary forms. Included in this analysis is the consideration of supplier's promptness in correcting and precluding nonconformances. The QAREp shall perform the following actions:

- (1) Analyze and evaluate data accumulated on AMC Form 1178, System Evaluation Results, to determine effectiveness of the supplier's adherence to his procedures.
 - (a) Evaluate the deficiencies to assure that they are properly identified and on-the-spot actions of the supplier are effective.
 - (b) Determine if follow-up actions reflect timely remedial action by the supplier.
 - (c) Determine if deficiencies found in one area or station require action due to possible adverse effect on other areas or stations.

- (d) Assure that an AMC Form 1176, Corrective Action Record, is issued on serious deficiencies.
- (2) Analyze and evaluate monthly, data accumulated on AMC Form 1179, System Evaluation Summary, to determine the effectiveness of the supplier's adherence to his procedures.
 - (a) Review and analyze the number of recorded inadequacies and the number of AMC Forms 1176 issued during the latest monthly period.
 - 1. Determine if the inadequacies involve procedural elements as having an adverse effect on acceptability of the end item.
 - 2. Determine whether the number of AMC Forms 1176 awaiting disposition warrants further action with the supplier.
 - 3. Determine whether all evaluation actions have been completed, as scheduled and the need for programming unchecked elements for the next evaluation period.
 - (b) Compare the latest evaluation results with previous summaries.
 - 1. Determine whether the number of inadequacies for the latest month has changed.
 - (a) If the number of inadequacies has increased, reschedule evaluation action in excess of regular frequency for the particular system element check point until improvement of the condition is observed.
 - (b) If the number of inadequacies has decreased, assure adjustment in evaluation frequency, consistent with the supplier's effectiveness.
 - 2. Determine the necessity for continuing follow-up action when supplier's corrective action is satisfactory.
 - 3. Review and analyze the number of AMC Forms 1176 incomplete and determine whether the extension of time or inaction by the supplier is justified or requires follow-up verification action.
 - 4. Review the evaluation results of the past cyclic verification period and determine whether unchecked elements require rescheduling or exclusion.
 - 5. Determine the need for adjusting the schedule and frequency of

system evaluation for subsequent verifications.

- (3) Review the records evaluation results, recorded on AMC Form 1023, Record Evaluation Summary, in supplementing the information gained from AMC Form 1179, to ascertain the degree of supplier's conformance to his procedures.
 - (a) Tabulate the number of repetitive, like errors, analyze their seriousness and determine whether corrective action has been taken.
 - (b) Determine whether the supplier's corrective action is satisfactory and effective to preclude recurrence or requires follow-up action.
 - (c) Ascertain whether the observed errors involve important acceptance inspection and test characteristics necessitating a meeting with the supplier or issuance of a formal letter.
 - (d) Determine whether the existing records evaluation schedule is adequate or in need of rescheduling, as a result of observed errors.
- (4) Review data generated on AMC Form 1025, Accuracy Inspection Summary, in supplementing the information gained from AMC Form 1179, to ascertain the proficiency of the supplier's inspection. This will be accomplished as related to measuring and test equipment, production equipment used in lieu of inspection equipment and the accuracy of supplier's inspection of the product.
- (5) Analyze product verification inspection results accumulated on the prescribed recording forms for each quality assurance verification area.
 - (a) Determine that the contents of the inspection records are complete and accurate, reflecting pertinent information of the inspected material, e.g., item identification, nomenclature, specification, date, contract data and material disposition.
 - (b) Determine that the identification of the characteristic, AQL, sample size, quantity and description of defects and degree of inspection (reduced, normal, tightened) are correct and in accordance with specified requirements.
 - (c) Determine whether the supplier's disposition or corrective action is satisfactory or warrants additional action.
- (6) Analyze product verification inspection results, summarized monthly, compiled from individual worksheets or summaries.

- (a) Determine that the contents posted to the summary form contain complete and accurate entries obtained from the individual inspection worksheets, when worksheets are used.
 - (b) Review and analyze the number of recorded inadequacies and the number of AMC Forms 1176 issued, comparing the latest evaluation results with previous summaries.
 - 1. Adjust the degree of verification in accordance with the requirements of the applicable plan.
 - 2. Maintain the effort over the affected area, until supplier's corrective action is considered satisfactory.
 - 3. If the supplier refuses to take action, corrective action is considered unsatisfactory or condition is unchanged, recommend suspension of inspection, through supervisory channels, to the officer administering the contract or order.
 - (c) Relate deficiencies with system evaluations for action to employ a more effective system evaluation and supplier corrective action to reduce probability of defective materiel.
- (7) Analyze and evaluate daily, the deficiencies reported on AMC Form 1176 for identifying the type of nonconformance and determine the urgency of action.
- (a) Ascertain that the posted entries accurately reference the source to which the deficiency is related or observed.
 - (b) Assure that the deficiency is clearly described to preclude misrepresentation of required actions of the supplier.
 - (c) Determine that the type of corrective action to be requested parallels the severity of the deficiency or problem.
 - (d) Analyze the supplier's explanation and determine if the corrective action taken is satisfactory to preclude the reported deficiency from recurring.
 - (e) Determine if appropriate follow-up action has been specified to assure that supplier's action is effective in eliminating the unsatisfactory condition.

- (8) Analyze and evaluate the deficiencies reported on AMC Form 1177,

Corrective Action Record Summary, to detect abnormal or out-of-control conditions on a monthly basis, or more frequently, to prevent repetitiveness of unsatisfactory conditions.

- (a) Evaluate the deficiencies and determine if the type and class of deficiency is repetitive or indicative of a trend.
- (b) Evaluate the number of deficiencies and determine if an excessive number of AMC Forms 1176 have been issued or emanate from a particular quality assurance verification area.
- (c) Determine if the supplier's remedial actions were effective by comparing verification results and noting any reappearance of like conditions.
- (d) Determine if the quantity of the repetitive deficiencies involves critical or functional characteristics. Also, if recurring trivial discrepancies require issuing an AMC Form 1176.
- (e) Assure that the time involved pending supplier's reply on final disposition or corrective action is justified by conditions.
- (f) Compare supplier's previous record of reported deficiencies against current AMC Form 1177 to determine the amount of verification effort and frequency required at the particular quality assurance verification area.

b. Total effectiveness determination of the supplier's system shall include the analysis of quality data received from using activities or other inspection agencies. The QAREP shall review reports covering material failure or recommended material improvement action.

- (1) Determine the seriousness and type of reported condition for necessary corrective action.
- (2) Ascertain the supplier's intent or proposed action regarding the cited condition.
- (3) Determine the kind and amount of verification checks that are required at the appropriate quality assurance verification area.

c. The QAREP shall employ reduced verification actions in quality assurance verification areas whenever evidence from quality data analysis indicates satisfactory supplier control.

d. In summation of the analysis performed in a and b above, unresolved or recurring quality problems shall be brought to the attention of the supplier. This will be accomplished by formal review with responsible management personnel of the supplier.

e. The QAREp shall notify his supervisor and request appropriate action on all problems of a major or serious nature that cannot be resolved in a timely manner. Product deficiencies attributed to design or suspected design failures shall be re-reported, through appropriate channels, to the quality assurance element.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 5
PLAN 5 — RESEARCH AND DEVELOPMENT PRODUCT PROCEDURES

2-5-000. Scope. This plan provides a procedure for performing quality assurance evaluation and verification actions on research and development procurements involving the delivery of a product. This plan shall be used when specifically requested by the responsible development agency or laboratory.

2-5-001. Purpose. a. This procedure is to be used to assure that the supplier's actions involving design, development, fabrication and testing of materiel conform to the requirements specified in the contract or order.

b. In conjunction with the above action, evaluation of the supplier's system shall be made part of the QAREp's verification efforts for ascertaining effectiveness of the supplier's system.

c. Decisions involving acceptance of the supplier's designs shall, unless otherwise directed, be the responsibility of the development agency, laboratory or procuring agency.

2-5-002. Application. a. The QAREp shall utilize this procedure at important review points during various phases of product development. In view of the supplier's latitude associated with research and development contracts, the QAREp shall implement this procedure primarily to substantiate supplier's over-all system conformance to procurement requirements.

b. The QAREp shall, through the use of this procedure, assure that the supplier provides the government with results of engineering evaluation in preparing drawings and other technical data pertaining to product development.

2-5-003. Procedure. a. The QAREp shall employ this procedure, giving consideration to the following factors, prior to executing formal verification:

- (1) Check for any additional instructions from the responsible quality assurance element, development agency, laboratory or procuring agency, for the performance of on-site quality assurance evaluation and verification actions and submission of quality reports. The quality assurance element, development agency, laboratory or procuring agency can designate this procedure or place restrictions on portions of this procedure, or furnish special requirements for covering inspection activities as provided in Part Six.

- (2) Review the procurement document and specified referenced data to determine whether the following are provided:
 - (a) Technical data requirements.
 - (b) Inspection system or quality program requirements.
 - (c) Qualified products list.
 - (d) Special tests involving performance, safety and reliability factors.
 - (e) Test samples, degree of inspection, and design characteristics.
 - (f) Special test equipment, environmental and laboratory conditions.
 - (g) Formal reports of results of tests, drawings and technical data.
 - (h) Government furnished equipment.
 - (i) Packaging requirements.
 - (j) Quality assurance element letter or quality assurance instructions.
- (3) The QAREP shall review the supplier's scope of work provisions, requiring the preparation of a formal operational forecast schedule and monthly progress and status reports.

b. In conjunction with a (2) above, the QAREP shall review the technical and quality assurance provisions of the applicable specification to determine whether a requirement exists for a formal inspection system or quality program, or any other plan of inspection.

- (1) When inspection system requirements are specified in the procurement documents, implement Plan 1 of this regulation.
- (2) When quality program requirements are specified in the procurement documents, implement Plan 2 of this regulation.
- (3) In addition to (1) or (2) above, this plan will also be used to support the regular requirements for Plan 1 or 2.

c. The following elements are considered minimum requirements for an adequate documented inspection system or quality program, whether or not a formal system or program is required (b above):

- (1) **Material control** - Assure that the supplier's control includes furnishing his subsuppliers and vendors complete and accurate material and inspection requirements in contracts, purchase orders or job orders. Also, the utilization of applicable qualified products lists, approved process and test sources, when specified.
- (2) **Receiving inspection** - Assure that the supplier has a control over all incoming material for insuring that pertinent dimensional characteristics, special test parameters, and procured material are inspected, and that rejected material is properly identified and segregated for disposition.
- (3) **Identification status** - Assure that the supplier provides for a control of identifying acceptable, reparable and rejected material throughout research and development operations.
- (4) **Measuring and test equipment** - Assure that the supplier has a control for insuring the accuracy and availability of inspection equipment, including use of government furnished equipment. Calibration of all inspection equipment shall be included with such equipment is used to verify definitive requirements of the item.
- (5) **Test reports and records** - Assure that the supplier provides for a control for insuring the acquisition of all test reports substantiating his subsupplier's conformance to material and performance requirements and availability of prime supplier's test reports and inspection records. Also, control be provided by the supplier for insuring that scheduled progress and status reports of the item are complete, accurate and coordinated with the on-site QARep prior to distribution, as provided in the procurement document.
- (6) **Drawings and changes** - Assure that the supplier provides control for identification and up-grading of drawings at review points so that latest information is incorporated. Also, that such drawings are compatible with the completed item upon delivery to the government for test or acceptance. When changes are made which are incorporated into the item and vice versa, assure that the changed drawings are dated and signed by a responsible person authorized by the supplier.
- (7) **Product inspection** - Assure that the supplier provides for inspection of components, subassemblies and assemblies prior to and after build up.
- (8) **Product inspection and test by the subsupplier** - Assure that a control is provided for insuring that when inspection is required of the subsupplier that performance of such inspection is accomplished and a formal

statement of findings, certified by a responsible representative of the subsupplier and authenticated by the prime supplier, is furnished.

- (9) Nonconforming material - Assure that the supplier provides for a positive control of identification, segregation and disposition of material found unsatisfactory. Also, a control over any departures from or additions to the original design criteria shall be subject to government review and analysis. The supplier shall provide a control for corrective action for deficiencies disclosed by tests. Items of material which have suffered degradation as a result of reliability testing, but have withstood destruction, shall be evaluated by the QAREp in accordance with conformance requirements.
- (10) Packaging - Assure that the supplier provides for a control of insuring proper mechanical and physical protection to the packaged material in accordance with procurement requirements, in preparation for delivery. If no packaging requirements are specified, the supplier shall propose and co-ordinate a packaging procedure for affording adequate protection to assure safe delivery at destination.

d. The QAREp shall evaluate the supplier's documented procedure for adequacy and conformance in accordance with this procedure, procurement documents, and applicable procedure described in this regulation. Evaluation of the supplier's over-all system shall be verified at periodic intervals, based on the circumstances or events at the facility. A careful analysis shall be made to avoid requesting the inclusion of procedures or instructions normally associated with mass production contracts, as well as omission of those that are necessary.

- (1) Compare each element of the supplier's procedures with the provisions of the contract, specification and referenced data, including elements listed in c above.
- (2) Record results of evaluation on appropriate forms applicable to system evaluation, described in this regulation.

e. The QAREp shall, in connection with the review of the prime supplier's procedures, determine whether the prime supplier is exercising control over his sub-suppliers in approving specified procedures, equipment and personnel. The QAREp shall consider the need for government source inspection.

f. The QAREp shall verify the supplier's projected subdivision of work with the provisions of the procurement documents, as follows:

- (1) Cross reference scope of work and determine whether the projected subdivisions of work include adequate inspection review points.

- (2) Analyze whether the progress of the supplier satisfies the terms of the contract or order.
- (3) Record results of system evaluation on AMC Form 1178, System Evaluation Results, in accordance with instructions in Part Five, Chapter 3, of this regulation.

g. Product inspection shall be performed at each important inspection review point, utilizing the supplier's operational schedule, to determine the accuracy and completeness of the drawings, specifications, test procedures and records. In addition to performing independent product accuracy inspection, the QAREp shall make known his desire of being notified as to the time and place for witnessing tests involving proof testing, design changes, retests, or a major process change conducted by the supplier. Prior to performing product inspection, the QAREp shall consider, in conjunction with the factors listed under h below, the following:

- (1) Check the availability of supplier's inspection and test procedure, special test equipment and updated drawings or specifications.
- (2) Witness, as applicable, the physical test of the item at the same time as the supplier.
- (3) Assure that the records of results of each inspection check performed by the supplier are available.
- (4) Review supplier records of significant errors or failures found nonconforming to established design documentation.
- (5) Post results of each inspection action on appropriate inspection worksheet record described in this regulation or one designated by the development agency, laboratory or procuring agency.

h. The QAREp shall evaluate the drawings for accuracy by performing product inspection as follows:

- (1) Select the most important part or component to be verified.
- (2) When the item is a complex part or component and all characteristics have been inspected by the supplier, a sample of the item or characteristics can be employed for comparison, using MIL-STD-105 or an approved plan for government inspection.
- (3) Verify the significant dimensional and performance characteristics against the quality requirements specified in the procurement documents for compatibility.

- (4) Take on-the-spot corrective action by verbally notifying the supplier if errors are observed indicating that the documents and the item are not compatible with each other.
- (5) Post results of each check on appropriate inspection worksheet in accordance with instructions in Part Five of this regulation.

i. When parts, components or assemblies are produced from approved research and development documents, drawings or specifications, the QARep shall perform product verification inspection using applicable procedures in Part Three of this regulation or as specified by the responsible quality assurance element, development agency, laboratory or procuring agency, through local officer administering the contract or order.

j. The QARep shall, when planning product inspection actions, consider utilizing, as required, metrology and special process specialists. Matters pertaining to engineering shall be co-ordinated with the cognizant project office of the responsible quality assurance element, development agency, laboratory, or procuring agency, through the local officer administering the contract.

k. The QARep shall periodically summarize and analyze the results of all product and system evaluation actions and determine whether the supplier's performance is satisfactory in the development of the product and a complete set of inspection and test documentation.

2-5-004. Reports. a. The QARep shall furnish the responsible quality assurance element, development agency, laboratory or procuring agency, specified reports outlining the progress and analysis of the supplier's efforts, 2-5-003 a above, including design and quality problems.

b. The QARep shall negotiate with the supplier an arrangement for reviewing, as applicable, the contractually required monthly progress and status reports, as required in 2-5-003 a (3) above, prior to their distribution.

- (1) Review the description of the report for accuracy, completeness and currency.
- (2) Verify the validity of the report by the use of 2-5-003 k above, the estimated calculations, conclusions, analysis and recommendation of the foregoing, including photographs, drawings or illustrations.
- (3) Notify the supplier of errors or incompletions observed.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 6
PLAN 6 — PRIME — SUBINSPECTION ELEMENT ACTIONS

2-6-000. Requirements. a. Verification inspection, system evaluation, or other services will be performed at a subsupplier's plant by a subinspection element only when one or both of the following conditions exist:

- (1) Inspection or other services are essential to the QARep at the prime supplier's plant in determining acceptability of the end item. Included in the requirement are characteristics which are not to be accepted on the basis of statements of findings.
- (2) Inspection and acceptance for direct shipment from a subsupplier's plant is required by the procurement documents.

b. The QARep at a prime supplier's plant shall review applicable procurement documents and referenced data for determining the need for and extent of inspection or services to be performed by the QARep at the subsupplier's facility. In making the determination, consideration shall be given to the following:

- (1) Inspection at any other point will require uneconomical disassembly or destructive testing.
- (2) Special instruments, gages, or facilities, required for inspection are only available at the subsupplier's plant, and not at the prime supplier's plant.
- (3) Inspection at any other point would destroy or require the replacement of costly special packaging and packing.
- (4) Control of quality is closely related or integrated with production methods or processes.
- (5) Whether or not test reports, inspection records, or other suitable statements of quality, related to quality characteristics inspected only at the subsupplier's plant, by either the prime or subsupplier, are available for use in lieu of inspection by an inspection element.
- (6) Whether or not inspection by an inspection element is necessary to verify that test reports, inspection records, or other statements of quality are valid.

- (7) Whether or not a subsupplier's system or control of special processes should be evaluated even though the subinspection element is not required to perform product verification inspection.

2-6-001. Procedure. a. When it has been determined that verification inspection or system evaluation at a subsupplier's plant is necessary, the prime inspection element shall arrange for the performance required.

- (1) When the subsupplier's plant is under the cognizance of the prime inspection element, the inspection or other services to be performed shall be co-ordinated between the QAREp's of the prime inspection element assigned to the prime and subsupplier plants.
- (2) When the subsupplier's plant is under the cognizance of another inspection element or another service, the inspection or other services to be performed shall be requested by inspection requisition as described in AMCR 715-508, Volume I.

b. The prime QAREp shall assure that the prime supplier includes all quality assurance provisions and applicable requirements for product inspection and as applicable an inspection system, citing specifications, etc., in the subcontract or order.

c. The prime QAREp shall include in or with the inspection requisition, as applicable, the following instructions:

- (1) Reference to the appropriate plan (Part Two, Chapters 1 through 7).
- (2) Define the extent of controls required, i.e., the authority for requesting written procedures from the subsupplier and the specific services to be performed by the subinspection element or service, relating to system evaluation, product verification inspection, or both.
- (3) Any quality assurance letter or implementation instructions that have been issued by the quality assurance element.
- (4) Any special requirements of the responsible quality assurance element, contained in Part Six of this regulation.
- (5) Copies of the prime supplier's inspection instructions, if they are to be used by the subinspection element or service for product verification inspection.

d. The subinspection element will be responsible for:

- (1) Adequacy and conformance evaluations, and product verification

inspection, by the methods prescribed in the designated plan, and in accordance with the instructions of the prime inspection element in the inspection requisition.

- (2) Reporting to the prime inspection element any major problems which arise between the subinspection element and the subsupplier.

e. When the subsupplier is required to furnish a written description of his inspection system or quality program, the following procedures shall be employed:

- (1) The subsupplier will prepare a written description of his inspection system or quality program and deliver it to the prime supplier.
- (2) The prime supplier will evaluate the written description and make whatever investigation he deems necessary to assure that the system or program will result in a product of the desired quality. After thorough review, the prime supplier will:
 - (a) If the written description is satisfactory, indicate approval and present it to the prime inspection element.
 - (b) If unsatisfactory, return it to the subsupplier for additions, changes or corrections.
- (3) When the subsupplier is located within the jurisdiction of the prime inspection element, the procedures will be evaluated at the subsupplier's plant.
 - (a) If satisfactory, the prime supplier will be notified of acceptance of the subsupplier's system as a part of the prime supplier's system.
 - (b) If unsatisfactory, return it to the prime supplier for additions, changes or corrections.
- (4) When the subsupplier is located outside the jurisdiction of the prime inspection element, the prime inspection element shall request the subinspection element to evaluate the written procedures for adequacy.
 - (a) The subinspection element will determine if the written procedures are acceptable or not acceptable, and forward results to the prime inspection element.
 - (b) The subinspection element shall not notify the subsupplier in writing that his written procedures or system are acceptable, as related to a subcontract or purchase order.

1. The subinspection element will, at its option, verbally notify the subsupplier that recommendations concerning acceptability have been furnished to the prime inspection element.
2. Positive information regarding acceptability shall be given to the subsupplier only by the prime supplier.

(5) The prime inspection element will:

- (a) If acceptable, notify the prime supplier of acceptance of the sub-supplier's system as a part of the prime supplier's system.
- (b) If not acceptable, return it to the prime supplier for additions, changes or corrections.
- (c) Furnish copies of all written communications between the prime inspection element and the prime supplier, regarding the subsupplier's quality program or inspection system, to the subinspection element.

f. The following procedures will be used when special processes only are performed at a subsupplier's facility:

- (1) The subsupplier shall establish processes or procedures and prepare written descriptions, as required by the applicable specifications or procurement documents, or use procedures furnished by the prime supplier.
- (2) The prime inspection element shall direct the prime supplier to:
 - (a) Assure that the processes, procedures and written descriptions comply with requirements.
 - (b) Assure that his supplier is fully qualified to operate and maintain the processes and procedures.
 - (c) Require his supplier to furnish objective evidence of compliance and quality of the product.
 - (d) Conduct periodic verification of evidence submitted by the subsupplier.
 - (e) Affix the signature of an authorized official to any documents furnished by the subsupplier to certify approval and authenticity.
 - (f) Furnish all pertinent information to the prime inspection element for review.

(3) The prime inspection element will:

- (a) Review the processes, procedures, written descriptions and evidence submitted.
- (b) Determine compliance with the applicable specifications and procurement documents.
- (c) Determine acceptability as a part of the prime supplier's inspection system or quality program.

(4) On-site review and analysis of special processes will be determined by the prime inspection element to be desirable:

- (a) When the subsupplier is located within the jurisdiction of the prime inspection element, the prime inspection element will:
 - 1. Witness the process or procedure and review any written descriptions.
 - 2. Record findings for the information of the QArep at the prime supplier's plant.
- (b) When the subsupplier is located within the jurisdiction of another inspection element, the prime inspection element shall requisition the services required.
- (c) The subinspection element will:
 - 1. Witness the process or procedure and review any written descriptions.
 - 2. Notify the prime inspection element of findings and results.

g. When a subsupplier performs the service of cleaning, preservation, packaging, packing and shipping for several prime suppliers, the inspection element, prime or sub, will proceed as follows:

- (1) Obtain from the subsupplier required written procedures for control of quality.
- (2) Inform the subsupplier that the plan is tentatively acceptable, when procedures are considered adequate.
- (3) Inform each prime supplier that a copy of the subsupplier's written procedures need not be furnished by the prime supplier to the inspection element for review. However, his review and approval of the subsup-

plier's system as a part of his system is required.

- (4) Obtain the names of the representatives authorized to act as his agents for inspection. If final inspection of product or packaging of product is to be performed by the subsupplier, each prime supplier shall also be required to notify the inspection element.
- (5) Consider the subsupplier's procedures as a part of the prime supplier's over-all plan for control of quality and subject to whatever controls the prime supplier desires to impose or require.

h. The subinspection element will issue any AMC Forms 1176, Corrective Action Record, necessary to the subsupplier during conformance evaluations, evaluations of performance of special processes, product verification or packaging. When corrective action taken by a subsupplier is not effective or he declines to institute corrective action measures, the following action shall be taken:

- (1) The subinspection element may originate a second AMC Form 1176. Spaces 1 through 8, except space 5, and Parts I and II shall be completed as described in Part Five, Chapter 1, and the form forwarded to the prime inspection element.
- (2) The prime inspection element shall:
 - (a) Issue the AMC Form 1176 to the prime supplier. This will be accomplished by completing space 5 and Part III of the form.
 - (b) Return the form with Part IV completed to the originating subinspection element when returned by the prime supplier.
- (3) The subinspection element shall perform follow-up and complete Parts V and VI.

i. Copies of all AMC Forms 1176 issued to the subsupplier shall be furnished by the subinspection element to the prime inspection element when action is completed.

j. Copies of AMC Forms 1178, System Evaluation Results, and AMC Forms 1179, System Evaluation Summary, will be furnished by the subinspection element, if requested by the prime inspection element.

k. The prime inspection element will not normally send the subsupplier's written plan, manual or brochure to a subinspection element for evaluation. It is assumed that copies will be available to the subinspection element at the subsupplier's plant. However, identification must appear on the written material so that correspondence

between the two elements is positive as to the exact material being evaluated. Dates, issues, revisions, etc., shall be referenced in the correspondence.

l. The prime inspection element will, during conformance evaluations, determine if the prime supplier has taken action with his subsupplier to preclude recurrence of unsatisfactory conditions. When action by the prime with his subsupplier is not taken as required by his procedure for control of subsuppliers, an AMC Form 1176 should be issued to the prime supplier.

m. The subinspection element shall submit copies of inspection reports, required by the applicable basic product verification procedure, to the prime inspection element.

- (1) Reports of inspection of the end item produced by the subsupplier will be submitted at the time of each shipment or, if more than one shipment is made per month, accumulated and submitted monthly.
- (2) Reports of inspection of parts and components making up the item produced by the subsupplier will be accumulated and submitted at the completion of the subcontract, purchase order or work order.
- (3) When inspection and acceptance for shipment from a subsupplier's plant is required by contract or purchase order, all inspection reports will be submitted at the completion of the order.
- (4) The prime inspection element will, at its option, request certain reports at more frequent intervals.

n. When definitive quality assurance provisions or substitute inspection instructions are not available, the subinspection element shall:

- (1) By using the prime supplier's inspection instruction, or if not furnished, the subsupplier's instruction, determine characteristics to be inspected by the subinspection element.
- (2) Prepare lists of characteristics to be inspected.
- (3) Furnish a copy of each list of characteristics with the first inspection report to the prime inspection element.

o. The prime inspection element shall request the prime supplier to report any defective material received from his subsupplier, when product verification inspection is being conducted by an inspection element at the subsupplier's plant. When defective material is received at the prime supplier's plant, the prime inspection element shall:

- (1) Verify that the prime supplier's report is accurate.
 - (2) Request from the prime supplier, information as to the action he intends to take, i.e.:
 - (a) Repair or rework by the prime supplier.
 - (b) Return to the subsupplier.
 - (c) Request for waiver to use material as is.
- p. When the prime supplier elects to perform the repair or rework:
- (1) The prime inspection element shall:
 - (a) Take action in accordance with the procedure of the plan in use for reinspection of repaired or reworked material.
 - (b) Issue an AMC Form 1176 to the subinspection element, including complete information regarding the defective material. Spaces 1 through 8 and Parts I, II and III shall be completed.
 - (2) The subinspection element shall:
 - (a) Inform the subsupplier of the deficiencies and request action to preclude recurrence. This may be accomplished by issuing another AMC Form 1176.
 - (b) Complete Part IV of the AMC Form 1176 received from the prime inspection element and return it to the prime inspection element.
- q. When the prime supplier elects to return the material to his subsupplier:
- (1) The prime inspection element shall:
 - (a) Assure that the prime supplier adequately identifies the material prior to return.
 - (b) Issue an AMC Form 1176, to the subinspection element, informing them that the material is being returned and including complete information regarding the defective material. Spaces 1 through 8 and Parts I, II and III shall be completed.
 - (2) The subinspection element shall:

- (a) Determine whether the subsupplier intends to rework, repair or scrap the material.
- (b) If the material is reworked or repaired, take action in accordance with the procedures of the plan in use for reinspection of the material.
- (c) Complete Part IV of the AMC Form 1176 and return it to the prime inspection element.
- (d) Assure that the subsupplier adequately identifies the material, if returned to the prime supplier, as repaired or reworked material.

r. When the prime supplier elects to submit a request for waiver to use the material as is, action will be as follows:

(1) The prime inspection element shall:

- (a) Take action in accordance with AMCR 715-508, Volume I.
- (b) Issue an AMC Form 1176 to the subinspection element, including complete information regarding the defective material. Spaces 1 through 8 and Parts I, II and III shall be completed.

(2) The subinspection element shall:

- (a) Issue an AMC Form 1176 to the subsupplier, requesting that action be taken to correct the deficiencies on any unshipped material and action to preclude recurrence.
- (b) Complete Part IV of the AMC Form 1176 received from the prime inspection element and return it to the prime inspection element.

s. When a subsupplier does not ship material containing defects to the prime supplier, but requests the prime supplier to accept the material and obtain official waiver of the defects, the following action shall be taken:

(1) The subinspection element shall:

- (a) Obtain copies of the subsupplier's findings and his request to the prime supplier.
- (b) Inspect the material in question.
- (c) Prepare a report of findings of the inspection performed.

- (d) Forward copies of the subsupplier's findings, his request to the prime supplier, and findings of the subinspection element's inspection to the prime inspection element.

(2) The prime inspection element shall:

- (a) Review the documentation received from the subinspection element.
- (b) Retain the documentation until action by the prime supplier has been determined.
- (c) If the prime supplier does not accept the request and declines requesting waiver, return the documentation to the subinspection element.
- (d) Endorses the request, if submitted, including any appropriate comments of the subinspection element, and process the request for waiver as provided in AMCR 715-508, Volume 1.

t. When corrective action taken by a subsupplier is not effective or he declines to institute corrective action measures, the following action shall be taken:

- (1) The subinspection element may originate a second AMC Form 1176. Spaces 1 through 8, except space 5, and Parts I and II, shall be completed and the form forwarded to the prime inspection element.

(2) The prime inspection element shall:

- (a) Issue the AMC Form 1176 to the prime supplier. This will be accomplished by completing space 5 and Part III of the form.
- (b) Return it to the originating subinspection element when the prime supplier returns the form with Part IV completed.

- (3) The subinspection element shall perform follow-up and complete Parts V and VI.

u. When the prime and subsupplier plants are both under the jurisdiction of one inspection element, the term "prime inspection element" refers to the segment which has cognizance over the prime supplier and the term "subinspection element" refers to the segment which has cognizance over the subsupplier.

v. A prime supplier may request that AMC Forms 1176 be issued to his representative stationed at the subsupplier's plant, or at his own plant, and not directly to his subsupplier. The prime inspection element shall inform the subinspection element of the request and both elements will comply with the request.

PART TWO
PLANS, SYSTEMS AND PRODUCT EVALUATION AND VERIFICATION

CHAPTER 7
PLAN 7 — CALIBRATION SYSTEM EVALUATION PROCEDURES

2-7-000. Scope. This chapter prescribes the technical quality assurance actions required by personnel of the inspection element where a documented calibration system is required of a supplier. An evaluation of a supplier's calibration system will be conducted when:

a. Specification MIL-C-45662, Calibration System Requirements, is prescribed as a procurement requirement.

b. Procurement documents require the supplier to provide and maintain gages and other measuring and test equipment in support of procurement requirements.

c. Suppliers establish and maintain a quality program and calibration system as a basis for government evaluation of their product even though the product is not subject to the conditions of a or b above.

2-7-001. Application. a. The use of this plan is a part of the over-all evaluation of a supplier's inspection system or quality program when a calibration system is required or as specified in 2-7-000 above.

b. In addition to the normal requirements for control of measuring and test equipment of the particular plan in use, the calibration system check lists contained in this chapter will be used for evaluation.

c. To aid in determining completeness of coverage of the general procedures, refer to the detailed check lists, 1 through 9, as applicable. The general procedures must be acceptable to the government before further evaluation of the calibration system is accomplished.

2-7-002. Procedure. a. The QARep is responsible for implementing this plan as follows:

- (1) Adequacy of general and detailed procedures or instructions will be evaluated for compliance with requirements. This will be accomplished during the over-all adequacy evaluation of the supplier's documented system by using the calibration system check lists.
- (2) Conformance evaluation will be scheduled and conducted with other elements of the supplier's system to determine compliance to the

accepted procedures. Schedules will be as determined for the quality assurance plan in effect, i.e., Plan 1, 2, 3, etc.

b. Initial adequacy and conformance evaluations will be performed by the metrology segment of the inspection element or a higher level metrology element. Subsequent evaluations will be performed by the QAREp.

c. The QAREp will enlist the aid of a metrology specialist when required on complex equipment or delicate instruments. This will only be necessary where the accuracy of the equipment cannot be determined by the QAREp.

d. The QAREp will request technical assistance of the metrology segment for the following, when necessary:

- (1) To assist the supplier establish satisfactory measurement facilities and calibration procedures.
- (2) Analysis and interpretation of Army test and measurement equipment and calibration system requirements.

CALIBRATION SYSTEM CHECK LIST - GP
GENERAL PROCEDURES

1. Written description of calibration system.
2. Adequacy of standards.
3. Environmental controls.
4. Intervals of calibration.
5. Detailed calibration procedures.
6. Calibration source.
7. Application and records.
8. Calibration labelling.
9. Control of subsupplier calibration.

CALIBRATION SYSTEM CHECK LIST NO. 1
WRITTEN DESCRIPTION OF CALIBRATION SYSTEM

1. Calibration intervals are specified for measuring and test equipment.
2. Sources of calibration are referenced for measuring and test equipment.
3. Measurement standards (reference and transfer) are listed.
4. Measurement standards are identified by nomenclature and number.
5. Calibration intervals are specified for measurement standards.
6. Sources of calibration are referenced for measurement standards.
7. Environmental conditions are specified for calibration of measurement standards.
8. Provisions are stipulated for maintenance of calibration system description.
9. System description, procedures and reports are available for review.

CALIBRATION SYSTEM CHECK LIST NO. 2
ADEQUACY OF STANDARDS

1. Standards have prescribed accuracy.
2. Standards conform to required stability.
3. Standards have adequate range.
4. Standards have adequate sensitivity.

CALIBRATION SYSTEM CHECK LIST NO. 3
ENVIRONMENTAL CONTROLS

1. Environmental conditions are controlled to the extent necessary to assure continued measurements of the required accuracy.
2. Consideration is given to:
 - a. Temperature.
 - b. Humidity.
 - c. Vibration.
 - d. Cleanliness.
 - e. Other controllable factors affecting precise measurement.
3. Controls are established for the application of compensating corrections when calibration results are obtained in environments which depart from standard conditions.

CALIBRATION SYSTEM CHECK LIST NO. 4
INTERVALS OF CALIBRATION

1. The calibration of measuring and test equipment and measurement standards are at periodic intervals.
2. The establishment of an interval period is based upon stability, purpose, and degree of usage.
3. The adjustment of interval periods, as evidenced by the results of previous calibrations.

CALIBRATION SYSTEM CHECK LIST NO. 5
DETAILED CALIBRATION PROCEDURES

1. Written procedures are prepared, provided and utilized for the calibration of each item of measuring and test equipment and measurement standards.
2. Procedures specify calibration be performed by comparison with higher accuracy level standards.
3. Procedures provide use of standard practices or manufacturer instructions to assure the accuracy of measurements involved in establishing product conformance.
4. Procedures are current, complete and available for review.

CALIBRATION SYSTEM CHECK LIST NO. 6
CALIBRATION SOURCE

1. The calibration of test and measuring equipment is by a source whose standards are traceable to the National Bureau of Standards.
2. The calibration of reference standards is by a capable commercial facility, a government laboratory or the National Bureau of Standards.
3. A report, certificate, or data sheet is available, attesting to the date, accuracy results, and conditions under which the calibration results of reference standards were obtained.
4. Provision is made for reports, record cards, etc., for subordinate standards, measuring and test equipment when such information is deemed essential.
5. Evidence is furnished that calibration sources other than the National Bureau of Standards or a government laboratory have their standards compared with a national standard at planned intervals.
6. Evidence is furnished that calibration sources other than the National Bureau of Standards or a government laboratory are in fact capable of performing the required service.
7. Certificates and reports are available for review.

CALIBRATION SYSTEM CHECK LIST NO. 7
APPLICATION AND RECORDS

1. Supporting records show that established schedules and procedures are applied to maintain the accuracy of measuring and test equipment and measurement standards.
2. An individual record of calibration for each item of measuring and test equipment and measurement standard provides calibration interval, date of certification and results of last calibration.
3. A report or certificate number is shown on the individual record of those items whose accuracy is reported by calibration report or certificate.
4. Records are available for review.

CALIBRATION SYSTEM CHECK LIST NO. 8
CALIBRATION LABELLING

1. The labelling of measuring and test equipment and measurement standards indicates the date of last calibration, by whom, and the date when the next calibration is due.
2. An identifying code reflects the status of serviceability for those items whose size or functional characteristics prohibit the application of a label.
3. Recall records are monitored to assure adherence to calibration schedules when labelling or coding is impractical.
4. Labels, codes, or recall records indicate the applicable condition of those items which are not required to be used to their full capabilities or which require a functional check only.

CALIBRATION SYSTEM CHECK LIST NO. 9
CONTROL OF SUBSUPPLIER'S CALIBRATION

1. Provisions are made for control of subsupplier's calibration system.
2. Evidence is furnished assuring subsupplier conforms to calibration system.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 1
GENERAL

3-1-000. Scope. This part prescribes the guidelines and techniques for system and product evaluation and verification to be used in conjunction with a plan provided in Part Two.

3-1-001. Application. a. The application of the guidelines and techniques in this part are for the exclusive use of the government. These guidelines and techniques are to be used for determining the adequacy of the supplier's procedures, his conformance to the procedures, his inspection accuracy and for verifying the quality of his product.

b. A prerequisite for application of this part will be that the supplier is conforming to the requirements of the procurement documents, a given military standard or an equivalent procedure. The criteria in each chapter, for changing the degree of inspection, shall not be used by the supplier.

3-1-002. Selection of techniques. a. The quality assurance element will designate the chapters of this part to be used for certain individual procurements. Special requirements for certain classes of items will also be contained in Part Six of this regulation.

b. When no specific technique is specified for application by the government, the inspection element will select the techniques compatible with the supplier's system and use as required by the applicable plan in Part Two.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 2
INSPECTION SYSTEM CHECK LISTS

3-2-000. Scope. This chapter describes the inspection system check lists to be used by the QAREp as a guide in determining adequacy and conformance status of supplier's documented inspection system.

3-2-001. Application. a. The inspection system check lists and characteristics listed thereon are to be used as required by plans contained in Part Two of this regulation.

b. To aid in determining completeness of coverage of the general procedures, the QAREp shall refer to the detailed check lists, 1 through 13, as applicable. The general procedures must be acceptable to the government before further evaluation of the inspection system is accomplished.

INSPECTION SYSTEM CHECK LIST -GP
GENERAL PROCEDURES

1. Administrative inspection control.
2. Inspection and testing records.
3. Drawings and changes.
4. Measuring and test equipment.
5. Process controls.
6. Indication of inspection status.
7. Government furnished material.
8. Nonconforming material.
9. Qualified products.
10. Inspection by supplier.
11. Inspection provisions.
12. Subcontracted or purchased supplies.
13. Preparation for delivery.

INSPECTION SYSTEM CHECK LIST NO. 1
ADMINISTRATIVE INSPECTION CONTROL

1. Inspection system documented, complete and descriptive to control quality, processed by supplier or subsupplier and available to the government.
2. Procedure revisions, including issue date, covering additions or deletions, co-ordinated with the government.
3. Provision for notification to the government representative in writing of any change to the inspection system and documented procedures.
4. Procedure for preparing, issuing and revising instructions, including co-ordination with the government.
5. Detailed procedures or instructions are clear, complete and current.
6. Removal of obsolete inspection instructions, record forms, check lists and test procedures, and replacement.
7. New procedures or instructions, as required by changes to contract, are co-ordinated with the government.
8. Quality data is summarized and reviewed for corrective or product improvement actions.

INSPECTION SYSTEM CHECK LIST NO. 2
INSPECTION AND TESTING RECORDS

1. Instructions on the preparation of inspection records are clear, complete and current.
2. Records containing inspection results, including criteria for approval or rejection, are consistent with needs for incoming material, during processing and completed items. (Master List of Characteristics for Record Evaluation, Part Five, Chapter 5, Figure 2.)
3. Certificates or statements of findings, attesting that material meets procurement requirements, are complete, authenticated and available.
4. Records submitted with materiel for acceptance indicate number of observations, quantities accepted, quantities rejected, and corrective action taken.
5. Records are complete and available to the government.

INSPECTION SYSTEM CHECK LIST NO. 3
DRAWINGS AND CHANGES

1. Availability and use of latest applicable drawings, specifications and changes, required by procurement documents.
2. Technical data is furnished to subsuppliers and, when necessary, to the government representative at the subsupplier's facility.
3. Removal or replacement of obsolete and illegible documents from all points of issue and use.
4. Changes are co-ordinated with the government representative and are accomplished at the specified effectivity point.

INSPECTION SYSTEM CHECK LIST NO. 4
MEASURING AND TEST EQUIPMENT

Note. When a calibration system is required, Plan 7 Calibration System Evaluation Procedures, Part Two, Chapter 7, will be used in conjunction with this check list.

1. Written description of supplier's system covering measuring and test equipment and measurement standards.
2. Adequate measuring and test equipment is available to assure that supplies conform to technical requirements.
3. Control of inspection equipment and production tooling used as a media of inspection.
4. Accuracy of measurement standards is traceable to the National Bureau of Standards.
5. Documentation indicating calibration intervals, date and results of last calibration and due date for next calibration, are available and complete.
6. Control of subsupplier's inspection equipment system.
7. Modified or repaired inspection equipment is approved prior to use.
8. Records indicate examination prior to usage, periodic inspections and status of inspection equipment.
9. Availability of inspection equipment for use by the QAREp.
10. Availability of supplier's personnel for operation and verification of accuracy and condition of inspection equipment.

INSPECTION SYSTEM CHECK LIST NO. 5
PROCESS CONTROLS

1. Preparation, approval and issuance of written procedures required by specification or contract.
2. Process instructions are provided and made available to inspection personnel.
3. Inspection and identification is adequate to assure conformance to requirements.
4. Certifications or statements of findings are complete and available.
5. Records of process analysis results are complete and available.

INSPECTION SYSTEM CHECK LIST NO. 6
INDICATION OF INSPECTION STATUS

1. Identification of inspection status of all material prior to, during and after processing.
2. Identification devices are adequate and used in accordance with acceptable procedures.
3. Inspection control devices are legible and complete.
4. Design of controls for identification of inspection status are distinctly different from government identifications.

INSPECTION SYSTEM CHECK LIST NO. 7
GOVERNMENT FURNISHED MATERIAL

1. Examination upon receipt for damage, quantity, completeness and type of government furnished material.
2. Recording and reporting to the government of damaged, malfunctioning or deterioration of government furnished material prior to, during and after installation.
3. Periodic inspections performed on government furnished material in accordance with procurement requirements.
4. Functional testing performed, prior to or after installation or both, as required by specification or procurement documents.
5. Safeguarding of all government furnished material, parts and assemblies.
6. Removal, replacement or repairs on government furnished material are coordinated with the government.

INSPECTION SYSTEM CHECK LIST NO. 8
NONCONFORMING MATERIAL

1. Positive identification and segregation of nonconforming and questionable material from mixing with acceptable material.
2. Recorded deficiencies are clearly descriptive of the unsatisfactory condition to permit adequate corrective action.
3. Instructions are available and used in accomplishing authorized repairs.
4. Reinspection is performed on repairs or comparable corrections.
5. Holding areas, mutually agreeable to the supplier and the government representative, are provided.
6. Holding areas are adequate for temporary detention or storage of material.
7. Records are complete and indicate effective corrective action in precluding recurrences.

INSPECTION SYSTEM CHECK LIST NO. 9
QUALIFIED PRODUCTS

1. Qualified products lists are available and of the latest issue.
2. Control to assure supplies are procured from qualified products lists, when required by specification or other procurement documents.
3. Records are complete for examinations or tests performed on material received from qualified sources.
4. Documents certifying compliance are complete, accurate and available.
5. Recording and reporting of damaged, malfunctioning or nonconforming items to responsible sources.

INSPECTION SYSTEM CHECK LIST NO. 10
INSPECTION BY SUPPLIER

1. Statistical sampling procedures are in accordance with applicable specification or other procurement documents.
2. Alternate sampling plan, comparable to plan specified, is co-ordinated with the government.
3. Prepared classification of characteristics or defects is submitted to the government for review.
4. Instructions to inspection personnel for inspection and in the use of sampling techniques are adequate.
5. Inspection is accurately accomplished in accordance with inspection instructions.
6. The acceptable quality levels (AQL's) assigned by the supplier to his inspection instructions are co-ordinated with the government.

INSPECTION SYSTEM CHECK LIST NO. 11
INSPECTION PROVISIONS

1. Alternate inspection provisions and equipment are co-ordinated with the government prior to use.
2. Alternate inspection procedures are equal to or better than the specified quality assurance provisions.
3. Alternate inspection equipment is comparable to equipment specified in the procurement document.
4. Written procedures, indicating the use of alternate methods, are acceptable to the government.

INSPECTION SYSTEM CHECK LIST NO. 12
SUBCONTRACTED OR PURCHASED SUPPLIES

1. Latest applicable drawings, specifications and changes are available for incoming material inspection.
2. Type and amount of inspection and test are in accordance with procurement requirements.
3. Nonconformances found on material inspected by a subinspection element at a subsupplier's plant is reported by the prime supplier and co-ordinated with the prime inspection element.
4. Copies of applicable purchasing documents are provided for the government representative at the subsupplier's plant.
5. Purchasing documents contain appropriate statement by the prime supplier when the government has determined that government inspection is required at a subsupplier's plant.
6. Control of quality of subcontracted supplies and corrective action with sub-suppliers.

INSPECTION SYSTEM CHECK LIST NO. 13
PREPARATION FOR DELIVERY

Note. Applicable when specifications MIL-P-116, Preservation, Methods of, MIL-STD-129, Marking for Shipment and Storage, or comparable packaging requirements are a part of the specifications or procurement documents.

1. Procedures describing prime or subsupplier's preservation and packaging operations are prepared.
2. Packaging data sheets, specifications, drawings or other instructions are utilized by inspection personnel.
3. Protection of packaging materials precludes deterioration or contamination.
4. Processing techniques and methods used are in accordance with level of protection specified in the procurement documents.
5. Alternate test procedures and equipment, used in lieu of specified tests, are co-ordinated with the government.
6. Records of unsatisfactory reports and corrective actions taken are reviewed to preclude recurrences.
7. Substitution of packaging materials is co-ordinated with the government.
8. Required certificates of compliance are available.
9. Provisions are made to utilize only approved testing facilities.
10. Provisions are made for control of shipping orders, markings and shipping documents for completeness and are current at the time of shipment.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 3
EVALUATION AND VERIFICATION OF INSPECTION AND QUALITY RECORDS

3-3-000. Scope. This procedure shall be used when evaluating supplier inspection and quality records. The type of records requiring evaluation are those generated by the supplier, recording the results of an act of inspection.

3-3-001. Procedure. a. The QAREp will prepare check lists and schedules, using the following procedure:

- (1) The Master List of Characteristics for Record Evaluation, Part Five, Chapter 5, Figure 2, compiled from a variety of records, is to be used in the preparation of individual check lists for a particular record. The master list contains known characteristics, which render a record suitable for the recognition and recording of quality of material produced.
- (2) The number assigned to a characteristic in the master list of characteristics shall be retained and used for the characteristic when included on an individual check list, AMC Form 1180, Record Check List, Part Five, Chapter 5, Figure 1. This system allows ready evaluation of a variety of records, or all records in a particular plant, to determine the characteristic or characteristics for which deficiencies most frequently occur. For example, if Characteristic 24, Disposition of Product, is discovered as a deficiency in many records rather than an isolated case of one record, breakdown of the entire system of disposition of product is indicated, as opposed to errors of one employee or one department.
- (3) A separate AMC Form 1180 shall be established for each verification area at which records are to be evaluated. The characteristics reflected on the master list shall be utilized to establish separate check lists. Only those characteristics that have an adverse effect on the control of quality should be listed. Only unbiased, impersonal facts should be considered. Numerical sequence of characteristics, as listed on the master list, should be retained when check lists are prepared.
- (4) If the same record is used in different areas for different purposes, separate check lists should be prepared, and the characteristics listed may or may not be the same. A different check list number should be assigned so that separate record evaluation summaries will result. If a record is to be used for the same purpose in many areas, and it is desirable to

evaluate it on a plant-wide basis, only one check list is necessary. If it is more desirable to evaluate use by area, separate check lists, identified by different numbers and areas, should be prepared.

- (5) AMC Form 1180 provides for scheduling record evaluation and the listing of applicable characteristics from the master list of characteristics.
- (6) Complete spaces 1 through 7 of AMC Form 1180.
- (7) Compare each characteristic on the record to be checked with appropriate characteristics on the master list.
- (8) Identify each record and characteristic to be checked so that future evaluations will be based on the same criteria. For example, an entry on the AMC Form 1180 for a record might be, Space 8, "24," Space 9, "Disposition of Product," Space 10, "---," Space 11, "Repair - Rework - Scrap." An entry for a record of gage inspection might be, Space 8, "40," Space 9, "Inspector's Signature, Initials or Stamp." Space 10, "10," Space 11, "Gage Checker's Name." Another method may be used for positive identification of an item on a record with the appropriate characteristic. A blank copy of the supplier's record or form can be attached to the AMC Form 1180. The characteristic number from the master list can be added to the form, adjacent to the item and circled. One of these two methods will be used so that different personnel will have the same basis for evaluation.
- (9) Complete spaces 8 through 11, 18 and 19, of the AMC Form 1180.
- (10) Establish a base period. The base period will normally be one week, two weeks, one month, etc. Base periods longer than four months (120 days) will not be established. The flexibility in base periods is to allow for establishing realistic schedules. A base period will be changed when the number of records generated changes, or the quality of records warrant change.
- (11) Establish a schedule. This will be accomplished as follows:
 - (a) Determine the number of records generated by the supplier during a previous period, equal to a base period. For the initial evaluation, the number of records will be approximated. In determining the number of records, actual count is not necessary.
 - (b) Using the number of records determined under (a) above, and Figure 1, Scheduling and Sampling Table Per Base Period, determine the number

of checks to be made during one base period.

- (12) Complete spaces 12 through 14 of the AMC Form 1180.
- (13) At the end of each base period, determine if the number of records generated require a change in the number of checks for the next base period. If a change is required, make appropriate entries in spaces 13 and 14 of the record check list.
- (14) If the check list is revised, make appropriate entries in spaces 15 through 17.

b. The QAREP shall perform periodic record evaluation, as follows:

- (1) Normal record evaluation will be utilized when there are no past evaluation results. The following criteria will apply:
 - (a) For each scheduled check per base period, a sample of records shall be evaluated. The sample shall be a random selection of records, generated since the last record evaluation.
 - (b) A sample of records will be selected from the records designated for evaluation in accordance with the sample size per check, normal column, Figure 1. Each sample record will be evaluated for all listed characteristics.
 - (c) Normal record evaluation will be continued until the requirements specified in Figure 2, Qualification Table for Reduced and Minimum Evaluation, are met. If results are equal to or less than the maximum number of errors permitted, reduced record evaluation will be utilized.
- (2) Reduced record evaluation shall be accomplished as follows:
 - (a) For each scheduled check per base period, a sample of records shall be evaluated. The sample shall be a random selection of records, generated since the last record evaluation.
 - (b) A sample of records will be selected from the records designated for evaluation in accordance with the sample size per check, reduced column, Figure 1.
 - (c) Failure to meet the requirements specified in Figure 2 will require normal record evaluation to be reinstated.

- (d) Reduced record evaluation will be resumed providing the results of subsequent five checks, immediately following return to normal, meet the requirements shown in Figure 2.
- (e) If results of reduced record evaluation for five checks are equal to or less than the maximum number of errors permitted, minimum record evaluation will be utilized.

(3) Minimum record evaluation will be accomplished as follows:

- (a) For each scheduled check per base period, a sample of records shall be evaluated. The sample shall be a random selection of records, generated since the last record evaluation.
- (b) A sample of records will be selected from the records designated for evaluation in accordance with the sample size per check, minimum column, Figure 1.
- (c) Minimum record evaluation will be continued until the qualification requirements of Figure 2 are exceeded. Failure to meet the requirements in Figure 2 will require normal record evaluation for the next five checks. If the results of these five checks exceed the maximum number of errors permitted, normal record evaluation will be continued until qualification for reduced evaluation has again been achieved.
- (d) Minimum record evaluation will be resumed providing the results of subsequent five checks, immediately following return to normal, meet the requirements shown in Figure 2.

(4) The supplier's records of examinations, tests, and quality will be examined to determine that the records are properly and completely accomplished regarding the characteristics deemed pertinent, as established by the appropriate check list.

(5) The examination of these records will be planned so that the records will be followed through all the steps of the operation that they affect.

(6) AMC Form 1022, Record Evaluation Results, Part Five, Chapter 6, Figure 1 and AMC Form 1023, Record Evaluation Summary, Part Five, Chapter 7, Figure 1, are to be used to reflect record evaluation results. Errors are to be tallied and analyzed to determine the degree and extent of errors observed in the sample. All deficiencies shall be called to the attention of supplier's personnel and space 18, action, of AMC Form

1022 completed. If no errors are observed, an AMC Form 1022 will be completed by filling in identifying information in spaces 1 through 14, entering "none" in space 16 c, errors, total and dating and signing by the QAREp. The reason for accomplishing a form even though no errors are found is to document the fact of adherence to an established schedule of record evaluation and to substantiate a posting to AMC Form 1023, and a resultant zero point plotted on a chart, if being maintained. If AMC Form 1023 is being used directly, without an AMC Form 1022 for each evaluation, as prescribed in k below, when no errors are found, appropriate entries should be made in spaces 8, 9, 10, 13 and 16 of AMC Form 1023.

- (7) Discrepancies related to record policy, format and inspection instructions, as commented on in g below, should not be recorded as errors on AMC Forms 1022 or 1023. Any such discrepancies noted should be handled as a procedural discrepancy under conformance evaluation procedures. Appropriate corrective action provided by those procedures shall be taken independently of this record evaluation procedure.
- (8) All discrepancies related directly to the records in the sample should be called to the attention of the supplier. Either spaces 18 and 21 of AMC Form 1022, spaces 17 through 22 of AMC Form 1023 or AMC Form 1176, Corrective Action Record, will be used depending on the seriousness of the discrepancy.

c. The QAREp shall retain each AMC Form 1022 for a period of 30 days or two base periods, whichever is the longer, after final satisfactory action or follow-up and posting on the record evaluation summary.

d. The QAREp shall maintain a summary by posting to AMC Form 1023 after each evaluation.

e. AMC Form 1023 shall be maintained for each record for which evaluations are made. If the same record is evaluated from different check lists because of difference in station, area, or department, a separate AMC Form 1023 shall be maintained for each check list number.

f. The QAREp can maintain a chart to show results of record evaluation. Three suggested charts are as follows:

(1) Control Chart:

- (a) A control chart can be used when sample size is constant as a basis for judging trends in regard to errors found in records. The "C"

chart will be used for the number of errors found in each sample selected for evaluation.

- (b) The central line of the chart, \bar{C} , will be the average number of errors per sample in a series of samples. \bar{C} will normally be computed after the first ten checks have been made. Thereafter, re-computation will be made after a series of five, ten, fifteen, etc., if the trend indicates the original \bar{C} is no longer appropriate.
- (c) The upper control limit will be drawn above the central line by an amount equal to $3\sqrt{\bar{C}}$. The lower control limit will be zero and need not be drawn on the chart. In order to eliminate unnecessary computation, the upper control limit can be determined by using Figure 3, Chart.
- (d) Eventually a stable central line, C' , will be established which will also stabilize the control limit and render periodic recomputation or changes unnecessary.
- (e) When out-of-control conditions are in evidence and the assignable cause was not covered by a previous corrective action record, issue an AMC Form 1176.

(2) Trend Chart:

A trend chart of average errors per record can be used when sample size is not constant. Control limits are not recommended for samples of unequal size. The chart can be used to determine trends in the quality of records generated by the supplier.

(3) Significant Errors Chart:

After a number of record evaluations have been made, experience will be gained regarding the number of errors made by a supplier. It will be possible to establish a given number of errors that is considered not significant. A chart can be maintained showing the number of errors in excess of the established significant value. Even though the number of errors does not exceed the established significant value, action shall be taken on each error, as required by b (8) above.

g. This procedure does not apply to completion or use of purchase orders, identification tags, change orders, etc. Completion and use of such forms and documents are procedural actions and are to be controlled during conformance evaluations.

h. When a record format includes inspection instructions, i.e., a classification of characteristics or steps in a test procedure, the characteristics, their classifications, the test procedure, will have been reviewed by the QARep to determine adequacy prior to use by the supplier. Therefore, adequacy of the inspection instructions that are not subject to change from record to record will not be included as a check point. The presence of the correct instructions will be a characteristic of record evaluation.

i. The use of lower control limits for errors per sample of ten records is not recommended since perfection on the part of the supplier should not be an area of investigation. If it is suspected that deliberate altering of records is being done to misrepresent the quality of the product or operation, a low average of errors should be investigated. Suspicion of untrained or irresponsible personnel will also be cause for action.

j. The use of a chart or charts is optional, as determined by the QARep. A supplier can develop almost complete control over errors in records and achieve an average very close to zero. The use of control, trend or significant errors charts will then have lost the original value of graphically showing undesirable conditions.

k. When records are under good control and few errors are observed, use of AMC Form 1022 can be eliminated and AMC Form 1023 used for direct recording of individual results. When individual AMC Forms 1022 are used and posted to the face of AMC Form 1023, completion of spaces 17 through 22 of AMC Form 1023 is not necessary for explanations and actions recorded in spaces 17 through 22 of AMC Form 1022.

l. If upon accomplishment or simultaneous review of AMC Form 1022 and AMC Form 1023 it is determined that an unsatisfactory condition exists, AMC Form 1176 will be issued. In this case, entries should be made in spaces 17 through 22 of AMC Form 1023.

m. The unsatisfactory conditions requiring action are as follows:

- (1) Satisfactory on-the-spot corrective actions cannot be concluded.
- (2) Previous corrective actions were not effective.
- (3) Errors of a serious nature.
- (4) Repetitive trivial errors occurring three times or more in any series of five checks.
- (5) Control chart reflects out-of-control conditions.

n. Serious errors are those that are likely to result in the supplier concluding nonconforming product is conforming, or likely to result in improper disposition of the product.

o. Trivial errors are other than serious and are not likely to result in the supplier concluding nonconforming product is conforming, nor likely to result in improper disposition of the product.

SCHEDULING AND SAMPLING TABLE PER BASE PERIOD						
Number of Records Processed	Normal		Reduced		Minimum	
	No. of Checks to be Made	Sample Size Each Check	No. of Checks to be Made	Sample Size Each Check	No. of Checks to be Made	Sample Size Each Check
1-5	1	All	1	All	1	1
6-10	1	All	1	5	1	2
11-90	1	10	1	5	1	3
91-150	2	10	2	5	1	5
151-280	3	10	3	5	2	5
281-500	5	10	5	5	3	5
501-1200	8	10	8	5	4	5
1201 and over	13	10	13	5	6	5

Figure 1.

QUALIFICATION TABLE FOR REDUCED AND MINIMUM EVALUATION		
Number of Records in Last Five Checks	Number of Errors Permitted	
	Serious	Trivial*
5-12	0	2
13-19	0	3
20-31	0	5
32-49	0	7
50	1	10
*Not qualified for reduced or minimum when the same trivial error occurs three or more times in any consecutive series of five checks.		

Figure 2.

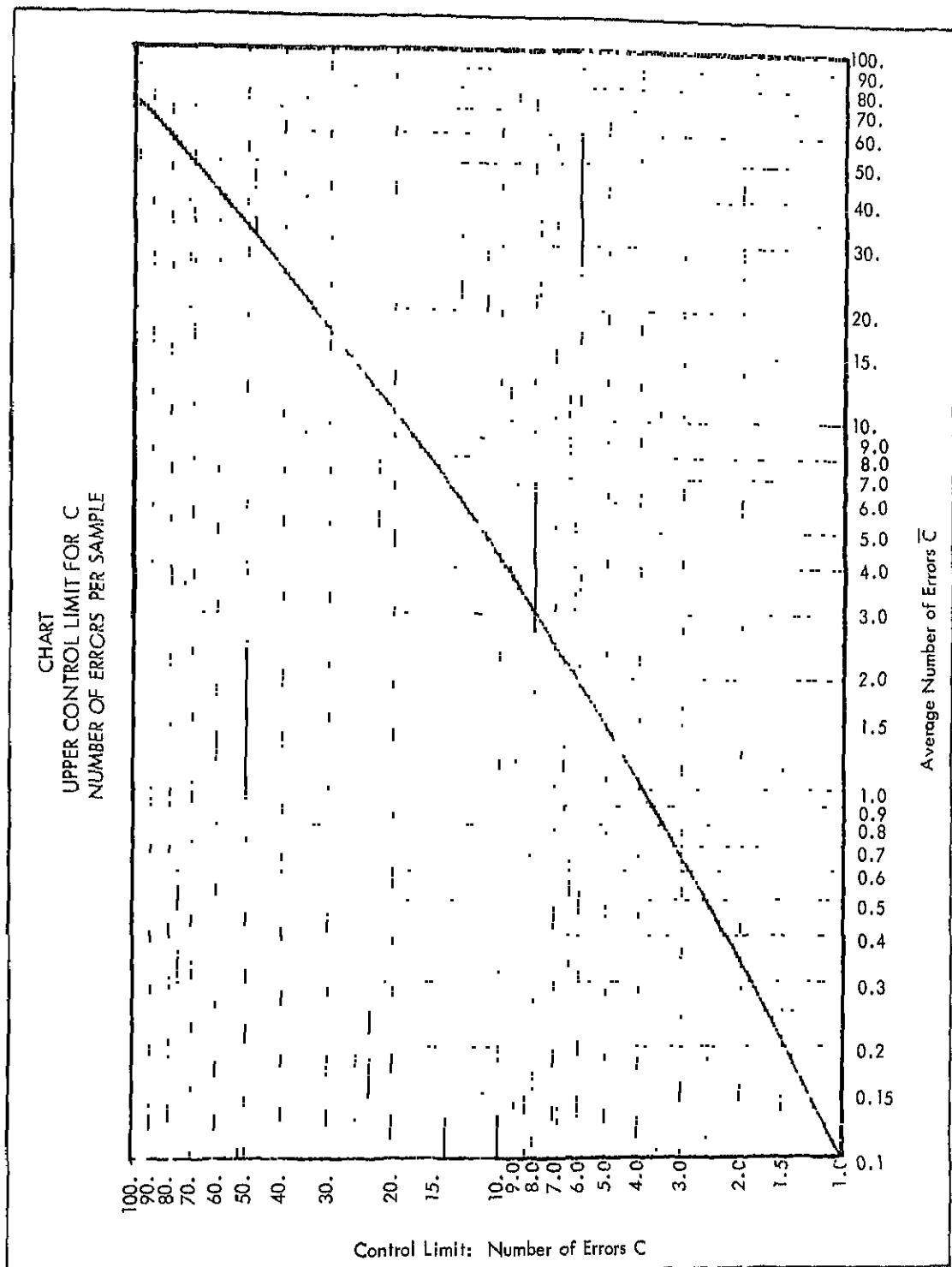


Figure 3.

PART THREE QUALITY ASSURANCE TECHNIQUES

CHAPTER 4 EVALUATION AND VERIFICATION OF SUPPLIER'S INSPECTION ACCURACY

3-4-000. Scope. This procedure will be used to determine and evaluate the supplier's effectiveness in the performance of inspection. Three methods are provided to allow for the selection and application of a plan suitable to the supplier's methods of inspection, volume of production and frequency of inspection. Accuracy verification inspection will not be performed when normal, reduced or tightened product verification inspection is being performed.

3-4-001. Procedure. a. The QARep will determine the facility activity, process or method of inspection to be evaluated and establish quality assurance verification areas. When a large number of products are to be inspected at a specific area, they may be grouped providing they are homogeneous as to:

- (1) Method of fabrication, such as a variety of sheet metal parts or machined parts being produced by the same basic method.
- (2) Methods of processing, such as a variety of parts subject to heat treatment, same method of packaging or soldering a variety of items.
- (3) Facility activity, such as a receiving department where the primary function is to handle or process materials or products, including accomplishment of prescribed inspection. When an activity is the basis for a quality assurance verification area, the parts or assemblies must be grouped by type; electronic items in one group, hardware items in another group, castings in another group. The important factor in grouping items is to maintain similarity of type of product.

b. For each quality assurance verification area, item or type, the QARep will prepare for checking supplier's inspection as follows:

- (1) Determine the number of inspection lots expected to be produced during a month. This figure may be based upon the production schedule or the lots inspected by the supplier during the preceding month.
- (2) Using the number of lots as determined under (1) and Figure 1, Scheduling Table for Inspection Accuracy, determine the number of lots to be verified during a period of one month. The normal level will be used until the conditions for reduced or minimum level, in i below, are met.

c. The QARep will select the appropriate verification method.

- (1) Method I is for determining the ability of supplier's inspectors to conform to inspection instructions. The method is particularly suitable in receiving inspection areas where lot formation cannot be controlled or in other areas where small lots of similar items are inspected at irregular intervals. It is also suitable where statistical techniques ordinarily used for analysis would be impractical due to lack of homogeneity, number of lots processed or other reasons.
- (2) Method II is for determining the supplier's accuracy in performing tests.
- (3) Method III is for determining supplier's inspection accuracy when the supplier is using statistical sampling and an estimated process average can be computed.

d. When it has been determined to use Method I, the QARep will conduct accuracy checks as follows:

- (1) Establish schedules in accordance with b above, and prepare an AMC Form 1025, Accuracy Inspection Summary, by completing spaces 1 through 7, as described in Part Five, Chapter 9.
- (2) Plan to perform at random, the required number of checks for the succeeding month. The checks should be without prior notice to the supplier, if possible.
- (3) As reflected by schedule, select the lot at random to be checked.
- (4) Using the same inspection or quality control instruction, classification of characteristics or list of characteristics used by the supplier, inspect the same sample inspected by the supplier. When 100% inspection is conducted by the supplier, select a sample in accordance with Figure 2, Sampling Table for Inspection Accuracy - Method I.
- (5) Determine the number of errors made by the supplier. An error will be the classifying of a defective item as not defective or a conforming item as defective.
- (6) Prepare an AMC Form 1024, Accuracy Inspection Worksheet, as described in Part Five, Chapter 8.
- (7) Take on-the-spot corrective action in conjunction with the supplier's authorized representative and record on AMC Form 1024.

- (8) Post results of each accuracy check to the AMC Form 1025 prepared as required by (1) above, by completing spaces 8 through 29, as described in Part Five, Chapter 9. AMC Form 1025 may be used for direct recording of results and completion of the AMC Form 1024 omitted.
 - (9) Compute as described in f below, and post to AMC Form 1025 the index of effectiveness for the check and the composite index of effectiveness for the last five checks.
- e. When it has been determined to use Method II for determining supplier's accuracy in performing tests, the QARep will conduct accuracy checks as follows:
- (1) Establish schedules in accordance with b above, and prepare an AMC Form 1025 by completing spaces 1 through 7 as described in Part Five, Chapter 9.
 - (2) Plan to perform at random, the required number of checks for the succeeding month. The checks should be without prior notice to the supplier, if possible.
 - (3) As reflected by schedule, select the lot at random to be checked.
 - (4) Using the same test procedure used by the supplier, test the same units tested by the supplier. The number of units to be tested for one check will be determined as follows:
 - (a) When the supplier is testing a sample, test one-half the sample.
 - (b) When the supplier is testing 100%, determine the sample size by comparing the quantity in the lot with Figure 3, Sampling Table for Inspection Accuracy - Method II. In the absence of specific inspection lots, a day's production may be considered a lot.
 - (5) If the test procedure requires a sequence of operations to be performed, check of each step in the sequence is required. Each step and measurement will be considered as one characteristic in determining errors.
 - (6) Determine the number of errors made by the supplier.
 - (7) Prepare an AMC Form 1024.
 - (8) Take on-the-spot corrective action in conjunction with the supplier's authorized representative and record on AMC Form 1024.

- (9) Post results of each accuracy check to the AMC Form 1025 prepared as required by (1) above, by completing spaces 8 through 29, as described in Part Five, Chapter 9. AMC Form 1025 can be used for direct recording of results and completion of AMC Form 1024 omitted.
- (10) Compute as described in f below, and post to AMC Form 1025 the index of effectiveness for the check and the composite index of effectiveness for the last five checks.

f. To estimate the supplier's effectiveness for Methods I and II, the QARep will use the following:

- (1) Use either units or characteristics as a base for computation.
- (a) When the formula for units is used, use the number of units inspected. When the supplier's sample varies in size for class of characteristics, use the larger sample size as the number of units.
- (b) When characteristics are used, count the number of characteristics inspected per unit and multiply by the number of units inspected. When the supplier's sample varies in size for class of characteristics, determine the number of characteristics for each class and total.
- (2) Compute the index of effectiveness for units or characteristics, using one of the following formulas:

$$\text{Normal for units} \quad IE_N U: \quad IE = \frac{U-E}{U}$$

$$\text{Normal for characteristics} \quad IE_N C: \quad IE = \frac{C-E}{C}$$

$$\text{Tightened for units} \quad IE_T U: \quad IE = \frac{U-E}{U+E}$$

$$\text{Tightened for characteristics} \quad IE_T C: \quad IE = \frac{C-E}{C+E}$$

Where IE is index of effectiveness, U is the number of units, C is the total number of characteristics for all units, and E is the number of errors.

- (3) Compute the composite index of effectiveness after the first five checks. Continuous recomputation will be accomplished as follows:

- (a) Subtract from the previous total the characteristics inspected and the errors made in the earliest check and add corresponding figures for the current check.
- (b) Compute the composite index of effectiveness for the last five checks. The formula CIE_N (C or U) will be used when normal comparison was used during the last five checks, formula CIE_T (C or U) will be used when tightened comparison was used during the last five checks. When both normal and tightened comparison have been used for the last five checks the formula CIE_T (C or U) shall be used. The formulas are as follows:

Normal for units	$CIE_N U:$	$CIE = \frac{U_5 - E_5}{U_5}$
Normal for characteristics	$CIE_N C:$	$CIE = \frac{C_5 - E_5}{C_5}$
Tightened for units	$CIE_T U:$	$CIE = \frac{U_5 - E_5}{U_5 + E_5}$
Tightened for characteristics	$CIE_T C:$	$CIE = \frac{C_5 - E_5}{C_5 + E_5}$

Where CIE is the composite index of effectiveness, U_5 is the total number of units for the last five checks, C_5 is the total number of characteristics for the last five checks, and E_5 is the total errors for the last five checks.

- (4) Comparison will be made by using one of the following:
- (a) For normal comparison use formula $IE_N U$ for units or $IE_N C$ for characteristics. This will be used initially and its use continued unless one of the following conditions occur:
1. Two consecutive accuracy checks indicate ineffectiveness.
 2. More than two accuracy checks in any consecutive run of seven accuracy checks indicate ineffectiveness.
- (b) For tightened comparison use formula $IE_T U$ for units or $IE_T C$ for characteristics. These will be used when one of the two conditions in (a) above, occur. Continue until three consecutive accuracy checks indicate adequate effectiveness and resume normal comparison.

- (5) Effectiveness will be considered adequate when IE is equal to or greater than .95 for the formula in use.

g. When it has been determined to use Method III, the QAREp will conduct accuracy checks as follows:

- (1) Establish schedules in accordance with b above, and prepare an AMC Form 1025 by completing spaces 1 through 7, as described in Part Five, Chapter 9.
- (2) Plan to perform at random, the required number of checks for the succeeding month. The checks will be without prior notice to the supplier, if possible.
- (3) As reflected by schedule, select at random, the lot to be checked. Lots found to be nonconforming by the supplier, and reinspected, are not to be used under this method.
- (4) Determine the first sample size, n_1 , using the table in Figure 4, Sampling Table for Inspection Accuracy - Method III. The minimum sample size for comparing results is eight. Sample results may be accumulated from several lots of like items to obtain sufficient number to make a comparison. The accumulation of results to obtain sufficient number to make a comparison will be considered one check.
- (5) Select the required sample at random.
- (6) Using the same inspection or quality control instruction, classification of characteristics or list of characteristics used by the supplier, inspect the sample.
- (7) Obtain the supplier's process average for each class of characteristics. If the supplier is using 100% inspection or changes from sampling to 100% inspection and it is expected that he will continue, Method I should be considered for use. When 100% inspection by the supplier appears to be temporary, the acceptable quality level for the class may be used in lieu of the supplier's process average. This will require no immediate change in methods.
- (8) The process average should be based on the last ten lots inspected or for all lots inspected in two months, whichever computation includes the fewer lots. If there are less than five lots, Method I should be considered for use.

- (9) Referring to Figure 5, Comparison Table of Inspection Results - Method III, find the process average (percent defective) that is nearest to the supplier's computed process average. Find the S number and the C number listed in the table for the sample. Compare these numbers with the number of defective units found in the accuracy check inspection for each class of characteristic.
- (a) If the number of defectives is zero, or less than the S number, the supplier's inspection is considered effective.
 - (b) If the number of defectives is equal to the S number, or is between S and C numbers, poor inspection can be suspected. When poor inspection is suspected, take additional samples as follows:
 - 1. Using Figure 4, Sampling Table for Inspection Accuracy - Method III, take a second sample equal to the number listed in column n_2 .
 - 2. If the number of defectives in the cumulative sample, n_c , is equal to the S number, or is between S and C for the cumulative sample, n_c , poor inspection is still probable.
 - 3. Take necessary action in conjunction with the supplier's authorized representative and record on AMC Form 1024.
 - (c) If the number of defectives equals or exceeds the C value in the first or cumulative sample, poor inspection is certain. This is considered a serious error on the part of the supplier. Corrective action will be taken in conjunction with the supplier's authorized representative.
- (10) Prepare an AMC Form 1024.
- (11) Post results of each accuracy check to AMC Form 1025 prepared as required by (1) above, by completing spaces 8 through 29. AMC Form 1025 can be used for direct recording of results and completion of AMC Form 1024 omitted.
- h. The QAREp will take on-the-spot corrective action on all errors discovered during accuracy inspection. Action will be taken as follows:
- (1) Evaluate the error and determine if the error is serious or trivial.
 - (a) Serious errors are those that are likely to result in the supplier concluding nonconforming product is conforming.

- (b) Trivial errors are other than serious and are not likely to result in the supplier concluding nonconforming product is conforming.
- (2) For serious or repetitive trivial errors, take on-the-spot corrective action and issue an AMC Form 1176, Corrective Action Record.
- (3) For trivial errors, take on-the-spot corrective action.
- (4) If upon posting to AMC Form 1025 or simultaneous review of AMC Forms 1024 and 1025, it is determined that an unsatisfactory condition exists, appropriate corrective action should be taken.
 - (a) For Method I or II, corrective action will be taken when index of effectiveness or composite index is less than .95 or 2 computations out of 3 remain at .95, for the formula in use, and one of the following conditions exists:
 - 1. Satisfactory on-the-spot corrective action cannot be concluded.
 - 2. Previous corrective actions were not effective.
 - (b) For Method III, corrective action will be taken when cumulative samples were inspected on two consecutive individual checks or more than two checks in a consecutive run of seven checks in which poor inspection was suspected, and one of the following conditions exists:
 - 1. Satisfactory on-the-spot corrective action cannot be concluded.
 - 2. Previous corrective actions were not effective.

i. The QARep will review results of accuracy inspection monthly for possible adjustment of schedules. A schedule may be adjusted when the following requirements are met:

- (1) The reduced level, Figure 1, Scheduling Table for Inspection Accuracy, of inspection may be used when the following conditions are met:
 - (a) For Methods I and II:
 - 1. The preceding month's verification was performed at the normal level.
 - 2. The index of effectiveness for the preceding month was .95 or greater.

3. No AMC Form 1176 was issued during the preceding month.
 4. All outstanding AMC Forms 1176 have been concluded.
- (b) For Method III:
1. The preceding month's verification was performed at the normal level.
 2. None of the checks made during the preceding month equaled or exceeded a C value for a sample n_1 or n_c , or an S value, after inspecting a sample n_c .
 3. All outstanding AMC Forms 1176 have been concluded.
- (2) The minimum level, Figure 1, Scheduling Table for Inspection Accuracy, of inspection may be used when the following conditions are met:
- (a) For Methods I and II:
1. The preceding month's verification was performed at the reduced level.
 2. The index of effectiveness for the preceding month was .95 or greater.
- (b) For Method III:
1. The preceding month's verification was performed at the reduced level.
 2. None of the checks made during the preceding month equaled or exceeded a C value for a sample n_1 or n_c , or an S value, after inspecting a sample n_c .
- (3) The normal level shall be reinstated if any of the following conditions occur while using reduced level or minimum level:
- (a) For Methods I and II:
1. The index of effectiveness falls below .95.
 2. The occurrence of a serious error and immediate corrective action that eliminates the cause is not taken.

(b) For Method III:

The occurrence of a serious error, i.e., the C value is equaled or exceeded and immediate corrective action that eliminates the cause is not taken.

j. Under this procedure the facility activities are the basis of the evaluation as opposed to verification of process or product. The evaluation may be based on a certain inspector, inspectors under one supervisor or the same inspection equipment, used by a variety of inspectors. During the use of these methods it may be necessary to review records to determine which inspectors conducted the inspection. When it is discovered that checks are not satisfactorily distributed, in relation to inspection personnel, adjustments in the selection of lots should be made.

k. Accuracy inspection is the evaluation of a supplier's inspection results to determine the supplier's effectiveness in the performance of his inspection. Effectiveness is not only predicated on the supplier concluding that deficient product is conforming, but also the supplier concluding that conforming product is nonconforming.

l. During the use of this procedure errors may be discovered that are other than accuracy of inspection. Errors in records or gage control might be found. Errors not directly related with accuracy of the supplier's inspectors or the process average under Method III are not to be recorded as errors under this procedure. However, in all cases appropriate corrective action will be taken. As an example, the QAREp investigates an error with the supplier; it is discovered that the cause was a worn-out gage. The error then would no longer be an error made by the supplier's inspector. The error would be in control of gages. It may indicate a breakdown in the supplier's control of inspection equipment, indicating insufficient conformance evaluations. The error properly recorded would then place emphasis in the appropriate category and would not be a factor affecting the adjustment of schedules.

m. In the application of the methods contained in this procedure, the QAREp will occasionally find lots of material that are nonconforming. As these methods are not designed to replace product verification, the QAREp will not directly accept or reject material. When material is found that should have been classed as nonconforming by the supplier, it will be considered a serious error. The QAREp will identify all material that he finds to be nonconforming. He will assure that the supplier properly classifies and handles it so that nonconforming material will not be offered for acceptance as normal conforming material. Corrective action will be required of the supplier. The primary element of corrective action by the supplier would then be that he screen the material and identify any additional nonconforming material found. The second element of primary importance is the action taken to preclude recurrence of like errors.

n. The methods contained in this procedure are system evaluation and verification procedures, and are not to be used by the QARep in lieu of product verification procedures contained in this regulation.

o. In determining whether appropriate corrective action is taken by the supplier, an investigation will be conducted to determine whether errors are assigned to:

- (1) Deliberate disregard of inspection instructions.
- (2) Lack of instructions.
- (3) Hasty or careless inspection.
- (4) Misunderstanding of inspection instructions.
- (5) Causes attributable to engineering or supervision.
- (6) Use of faulty or improper inspection equipment.
- (7) Other assignable causes.

p. Positive action is required when verification results reflect consistently poor or inadequate inspection by the supplier. When the supplier is unable to detect and correct the causes for poor or inadequate inspection, the QARep will take appropriate action as follows:

- (1) Adjust required product verification inspection.
- (2) Continue the accuracy inspection method.
- (3) Take appropriate action, through the officer administering the contract or order, with the supplier.
- (4) Product verification inspection may be readjusted and reliance again placed on the methods contained in this procedure, when the following requirements are satisfied:
 - (a) Data accumulated by the QARep indicates adequate control of quality by the supplier.
 - (b) The supplier has effected satisfactory corrective action to preclude recurrence of the condition.

g. When Method II is used, it is not mandatory that the QAREp perform or repeat the tests. For expensive, complicated or time consuming tests, it may be determined that witnessing the supplier's performance of the tests should be done. If this is the case, the principles of witnessing supplier's inspection (par. 2-2-404 d) will be used with this procedure. The recording of results, corrective action, etc., shall be as specified for Method II in this procedure. This use of witnessing supplier's inspection shall not be construed as product verification for acceptance. It shall be considered as an aid in the use of this procedure to evaluate supplier's system and performance.

r. The use of units or characteristics in estimating effectiveness is at the discretion of the QAREp. (Generally, units should be used when the number of units is large and the number of characteristics per unit is small. Conversely, characteristics should be used when the number of units is small and the number of characteristics per unit is large.)

SCHEDULING TABLE FOR INSPECTION ACCURACY			
Number of Lots Produced During One Month	Lots to be Inspected		
	Level		
	Normal	Reduced	Minimum
2-8	2	2	1
9-15	3	2	1
16-25	5	2	1
26-50	8	3	1
51-90	13	5	2
91-150	20	8	3
151-280	32	13	4
281-500	50	20	7
501-1200	80	32	11
1201-3200	125	50	16
3201 and over	200	80	26

Figure 1.

SAMPLING TABLE FOR INSPECTION ACCURACY — METHOD I	
Quantity in Lot	Sample Size
2-8	2
9-15	3
16-25	5
26-50	8
51-90	13
91-150	20
151-280	32
281-500	50
501-1200	80
1201-3200	125
3201 and over	200

Figure 2.

SAMPLING TABLE FOR INSPECTION ACCURACY — METHOD II	
Quantity in Lot	Sample Size
2-15	2
16-25	3
26-90	5
91-150	8
151-500	13
501-1200	20
1201 and over	32

Figure 3.

SAMPLING TABLE FOR INSPECTION ACCURACY -- METHOD III			
Quantity in Lot	Sample Size		
	First n_1	Second n_2	Cumulative n_c
2-8	*1		
9-15	*2		
16-25	*3		
26-50	*4		
51-90	8	8	16
91-150	12	12	24
151-280	18	18	36
281-500	25	25	50
501-1200	35	35	70
1201-3200	55	55	110
3201 and over	70	70	140
*Additional samples required from other lots of the same item. The minimum sample size for comparison with the supplier's process average is eight or more.			

Figure 4.

COMPARISON TABLE OF INSPECTION RESULTS — METHOD III																
Sample Size n_1 or n_c	Process Average (Percent Defective)															
	0.10%		0.25%		0.50%		0.75%		1.00%		1.50%		2.00%		3.00%	
	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C
5	-	1	-	1	-	1	-	1	-	1	-	1	-	1	1	2
8	-	1	-	1	-	1	-	1	1	2	1	2	1	2	1	2
10	-	1	-	1	-	1	-	1	1	2	1	2	1	2	1	3
12	-	1	-	1	-	1	1	2	1	2	1	2	1	2	2	3
16	-	1	-	1	1	2	1	2	1	2	1	2	1	3	2	3
18	-	1	-	1	1	2	1	2	1	2	1	2	2	3	2	3
24	-	1	-	1	1	2	1	2	1	2	2	3	2	3	2	4
25	-	1	-	1	1	2	1	2	1	2	2	3	2	3	2	4
35	-	1	1	2	1	2	1	2	2	3	2	3	2	4	3	5
36	-	1	1	2	1	2	1	2	2	3	2	3	2	4	3	5
50	-	1	1	2	1	2	2	3	2	3	2	4	3	5	4	6
55	-	1	1	2	1	3	2	3	2	3	3	4	3	5	4	6
70	-	1	1	2	2	3	2	3	2	4	3	5	4	6	5	7
110	1	2	1	3	2	3	3	4	4	5	5	6	6	7	7	9
140	1	2	2	3	2	4	3	5	4	5	5	7	7	8	9	11
n_1 or n_c	4.00%		5.00%		6.00%		7.00%		8.00%		9.00%		10.00%		12.00%	
	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C
5	1	2	1	2	1	2	1	3	2	3	2	3	2	3	2	3
8	1	3	2	3	2	3	2	3	2	3	2	4	2	4	3	4
10	2	3	2	3	2	3	2	4	2	4	3	4	3	4	3	5
12	2	3	2	3	2	4	3	4	3	4	3	5	3	5	4	5
16	2	4	2	4	3	4	3	5	3	5	4	5	4	6	4	6
18	2	4	3	4	3	5	3	5	4	5	4	6	4	6	5	7
24	3	4	3	5	4	5	4	6	4	6	5	7	5	7	6	8
25	3	4	3	5	4	5	4	6	4	7	5	7	5	7	6	8
35	4	5	4	6	5	7	5	7	6	8	6	9	7	9	8	10
36	4	5	4	6	5	7	5	8	6	8	6	9	7	9	8	10
50	5	7	5	8	6	8	7	9	7	10	8	11	9	12	10	13
55	5	7	6	8	7	9	7	10	8	11	9	12	9	13	11	14
70	6	8	7	10	8	10	9	12	10	13	11	14	12	15	14	17
110	9	11	11	13	12	15	13	16	15	18	16	19	18	21	21	24
140	11	13	13	15	15	17	16	19	18	21	20	23	22	25	25	29
C - Number of defective units at/or above which poor inspection is certain. S - Number of defective units at/or above which poor inspection is suspected.																

Figure 5.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 5
EVALUATION AND VERIFICATION OF SUPPLIER'S USE OF
MEASURING AND TEST EQUIPMENT

3-5-000. Scope. This procedure shall be used to evaluate and verify a supplier's use of in-process and final inspection equipment and calibration of mechanical and electrical standards.

3-5-001. Procedure. a. This procedure is supplemental to requirements of over-all evaluation. This detailed information will be used in addition to that provided by the applicable plan for evaluating a supplier's system. The evaluations, adequacy and conformance, will be conducted and records maintained, with the applicable check list, operation or function, as required.

b. The type of equipment for which the supplier shall establish the required controls includes, but is not limited to, the following:

- (1) Mechanical measuring and calibration instruments, masters, templates or meters.
- (2) Optical measuring equipment used to determine dimensional requirements.
- (3) Special test equipment used in determining specified material requirements.
- (4) Electrical or electronic test equipment used to determine electrical or electro-mechanical potentials, functions, values or ratings.
- (5) Pneumatic or hydraulic test equipment, actuated by fluid pressures, used to determine values or ratings.
- (6) Scales and weight measuring equipment used to determine weights or measures of weight to ascertain mass, center of gravity or balance.

c. The QARep shall require the supplier to establish and maintain adequate controls. The following elements shall be considered and included as requirements, when applicable:

- (1) Product analysis for determining what examination and test equipment will be necessary for establishing and maintaining required control.

- (2) Documented procedure for control of examination and test equipment.
- (3) Approval or certification of equipment by the metrology segment of the inspection element.
- (4) System for equipment identification, providing positive relationship to each item of equipment.
- (5) Examination or test of new and reworked equipment prior to use.
- (6) Frequencies established for reinspection and maintenance.
- (7) Records maintained relative to identification, use and calibration.
- (8) Facilities for safekeeping and atmospheric protection of reserve equipment and equipment in use.
- (9) Provision for calibration equipment with accuracies traceable to the National Bureau of Standards, through a specified calibration program.
- (10) Gage wear policy where the wear allowance is always within the prescribed limits of the product tolerance.
- (11) Maintenance of technical data for assurance of complete control of dimensional and functional product characteristics.
- (12) Procedures for issue, maintenance, functional and dimensional control of examination and test equipment used by subsuppliers or vendors.
- (13) Maintenance of a system whereby corrective action is taken whenever material review, inspection or other quality evidence indicates product defects are attributable to faulty inspection equipment.
- (14) A system for analysis of calibration history to determine adequacy of calibration intervals and to detect and act on adverse trends.

d. The QARep shall establish schedules for verifying the accuracy of the supplier's inspection, use and maintenance of inspection equipment. In preparing the schedules, consideration will be given to the following:

- (1) Grouping or subgrouping of similar types of equipment.
- (2) Quality of the product produced, as determined by inspection results.
- (3) Complexity of equipment and time required for verification.

- (4) Effectiveness of previous corrective actions.
- (5) Conditions under which used.
- (6) Frequency of use.
- (7) Performance characteristics of test equipment.

e. When the schedules have been determined, the QARep will prepare an AMC Form 1025, Accuracy Inspection Summary, by completing spaces 1 through 7, as described in Part Five, Chapter 9.

f. The QARep will conduct verification checks as follows:

- (1) Using the established schedule, select the examination or test equipment to be verified by type, group or unit.
- (2) Determine the number of units to be verified by utilizing Figure 1, Sampling Table - Inspection Equipment and Standards, in this chapter.
- (3) Select at random the measuring or test equipment to be verified.
- (4) Determine from the supplier's inspection instruction, record cards, drawings, or other documents, the characteristics to be verified.
- (5) Verify the selected characteristics. The QARep will plan to perform this verification by witnessing examination and test performed by the supplier when practicable. Witnessing shall only be performed by personnel capable of performing the examination or test independently. When the supplier has an acceptable calibration system the examinations and tests performed for accuracy checks will not be duplicated to satisfy requirements for certification of equipment. Examination and tests performed will be used to serve a dual purpose. This includes initial certification or subsequent checks to verify continued accuracy.
- (6) Determine number of errors, as follows:
 - (a) Each dimensional, functional or calibration characteristic found out-of-tolerance shall be classed as an error.
 - 1. If the out-of-tolerance condition is in the direction which would permit submission for acceptance of nonconforming product and where assembly is the obligation of the supplier, permits subsequent assembly, the error shall be classed as serious.

2. When assembly of the item inspected with the inspection equipment is the obligation of the supplier and the out-of-tolerance condition is in the direction which would not permit subsequent assembly, the error shall be classed as trivial.

(b) In comparing findings with the last check made and recorded by the supplier on his records, the following will be classed as errors.

1. The supplier's record reflects an out-of-tolerance condition, which verifies findings in (a) above, and the equipment was released for use. This is another error, and counted in addition to the error in (a) 1 or 2 above.

2. The error in (a) 1 above, was attributed to the use of master equipment that was faulty or not calibrated. This error will be an additional serious error.

(c) Each dimensional or functional characteristic found in error, that does not relate to the final measurement, but would require additional caution, shall also be recorded and classed as trivial errors. For example, an indicator gage that sticks occasionally and requires hand manipulation to obtain a reading; a setting screw not properly sealed by the supplier's equipment checker.

(7) Prepare an AMC Form 1024, Accuracy Inspection Worksheet, as described in Part Five, Chapter 8.

(8) Record on AMC Form 1024 results and all deficiencies or errors detected.

(9) Post results of each accuracy check on the AMC Form 1025 by completing spaces 8 through 29. AMC Form 1025 can be used for direct recording of results and completion of AMC Form 1024 omitted.

(10) AMC Form 1176, Corrective Action Record, will be completed for each serious deficiency or error observed, including on-the-spot corrective actions.

od: g. The QARep will estimate supplier's effectiveness, using the following method:

(1) Total the number of characteristics for each unit checked.

(2) Compute the index of effectiveness, using one of two formulas, and post to the accuracy inspection summary.

Normal	$IE_N C:$	$IE = \frac{C-E}{C}$
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Tightened	$IE_T C:$	$IE = \frac{C-E}{C+E}$
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Where IE is the index of effectiveness, C is the number of characteristics, and E is the number of errors.

(3) Comparison will be made using one of two methods:

(a) For normal comparison use formula $IE_N C$. This method will be used initially and its use continued unless two accuracy checks in a run of seven accuracy checks indicate ineffectiveness.

(b) For tightened comparison use formula $IE_T C$. This method will be used when the condition in (a) above, occurs. Continue the use of this method until three consecutive accuracy checks indicate adequate effectiveness, and resume normal comparison.

(4) Compute and post to AMC Form 1025 the composite index of effectiveness for the last five checks. Continuous recomputation will be accomplished as follows:

(a) Subtract from the previous total the characteristics inspected and the errors made in the earliest check and add corresponding figures for the current check.

(b) Compute the composite index of effectiveness for the last five checks. The formula $CIE_N C$ will be used when normal comparison was used during the last five checks, formula $CIE_T C$ will be used when tightened comparison was used during the last five checks. When both normal and tightened comparison have been used for the last five checks, the formula $CIE_T C$ shall be used. The formulas are as follows:

Normal	$CIE_N C:$	$CIE = \frac{C_5 - E_5}{C_5}$
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Tightened	$CIE_T C:$	$CIE = \frac{C_5 - E_5}{C_5 + E_5}$
-----------	------------	-------------------------------------

Where CIE is the composite index of effectiveness, C_5 is the total number of characteristics for the last five checks, and E_5 is the total errors for the last five checks.

- (5) Effectiveness will be considered adequate for one check when IE is equal to or greater than .95 for the formula used. Effectiveness will be considered adequate for the last five checks when CIE is equal to or greater than .95 for the formula used.
- (6) On-the-spot corrective action will be taken for all errors, trivial and serious. Trivial errors and information regarding on-the-spot corrective action will be recorded on AMC Form 1024. On each serious error, record necessary information on AMC Form 1024 and issue an AMC Form 1176. For recurring trivial errors, also issue an AMC Form 1176.

h. No table is furnished in this procedure for scheduling purposes. The schedule checks are determined by frequency of use of the equipment. Adjustments of schedules will be made by the QARep from review of records. Action with the supplier, through the officer administering the contract or order, to obtain corrective action may be preferred rather than an adjustment of the schedule to increase checks.

i. During accuracy checks errors may be detected that require action in respect to other procedures. These errors will be acted upon; however, not counted as errors under this procedure. For example:

- (1) It is found that the supplier failed to conduct inspection on a scheduled date. This is an error of nonconformance under system conformance. If the error was pertaining to a serious error, an AMC Form 1176 will be issued and charged to conformance evaluation.
- (2) Trivial errors, chargeable to other procedures, may be recorded on AMC Form 1024 and on-the-spot corrective action taken. These errors will not be counted as an error when computing the index of effectiveness under this procedure.

j. The supplier's inspection records for measuring and test equipment will be evaluated using Part Three, Chapter 3, of this regulation.

SAMPLING TABLE — INSPECTION EQUIPMENT AND STANDARDS	
Units in Group or Subgroup	Sample Size
2-8	2
9-15	3
16-25	5
26-50	8
51-90	13
91-150	20
151-280	32
281-500	50
501-1200	80
1201 and over	125

Figure 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 6
EVALUATION AND VERIFICATION OF SUPPLIER'S USE OF
PRODUCTION EQUIPMENT USED FOR INSPECTION

3-6-000. Scope. This procedure will be used when production equipment, such as jigs, fixtures or tool masters, is used as a media for inspection in lieu of inspection equipment.

3-6-001. Procedure. a. This procedure is supplemental to requirements of over-all evaluations. This detailed information will be used in addition to that provided by the applicable procedure for evaluating a supplier's system. The evaluation, adequacy and conformance will be conducted, and records maintained, with the applicable check list, operation or function.

b. The QAREp will require the supplier to establish and maintain the following controls.

- (1) A documented general procedure for control of production equipment used for inspection to be a part of his written quality program procedures.
- (2) Supplement the general procedure with a detailed procedure or instructions for the inspection of each jig, fixture, tool master, or other piece of equipment to be used for inspection of product.
- (3) Performance of an initial inspection, calibration, qualification or other action necessary, witnessed by the QAREp, to prove each piece of equipment is satisfactory.
- (4) Provide for the inspection, calibration, qualification or other action necessary, witnessed by the QAREp, of any equipment that is repaired or modified due to engineering change, after initial action.
- (5) A schedule for periodic reinspection of each piece of equipment.
- (6) Maintenance of records of each inspection performed.
- (7) Notification to the QAREp of any proposed change to an accepted instruction, prior to making the change.

c. The QAREp will review the general procedure, each detailed procedure or

instruction, the schedule for reinspection and the proposed content of the records to be maintained, to determine acceptability.

d. The QAREp will review each detailed procedure or instruction and determine and record each characteristic or feature which will be inspected by use of the equipment.

- (1) A separate list will be compiled of each characteristic or feature which affects or might affect interchangeability during field use of the product.
- (2) The list of characteristics possibly affecting field interchangeability, along with the proposed method of inspection, will be referred to the quality assurance element, when one of the following conditions exists:
 - (a) The QAREp determines there is a need for technical assistance from the quality assurance element to verify the adequacy of the list.
 - (b) The quality assurance element has requested the QAREp, through the inspection element, to submit this list for evaluation and acceptance.

e. The QAREp will prepare schedules for checking the supplier's accuracy in reinspection, calibration or requalification of the equipment.

- (1) In preparing the schedules, the following items will be considered:
 - (a) Schedules may be established by grouping similar jigs and fixtures on one schedule.
 - (b) A schedule for each jig and fixture may be established.
 - (c) If individual schedules are used, the schedule may be established for one accuracy check per month or one for each third check made by the supplier, if more than three are performed in a month.
- (2) Using the supplier's schedule for periodic reinspection and Figure 1, Sampling Table - Production Equipment Used for Inspection, determine the number of accuracy checks to be made.
- (3) When the number of checks to be made has been determined, the QAREp will prepare an AMC Form 1025, Accuracy Inspection Summary, by completing spaces 1 through 7, as described in Part Five, Chapter 9.
- (4) Plan to perform the required number of checks for the succeeding month, without prior notice to the supplier, if possible.

f. The QAREp will conduct accuracy checks as follows:

- (1) Using the inspection schedule, determine the jig, fixture or tool master to be inspected, without prior notice to the supplier. Care must be exercised to avoid interruption of the supplier's operation.
- (2) Using the supplier's instruction, witness each check, measurement or observation made by the supplier.
- (3) If the instruction requires a sequence of operations to be performed, witness each step in the sequence as it is performed.
- (4) Prepare an AMC Form 1024, Accuracy Inspection Worksheet, as described in Part Five, Chapter 8.
- (5) Record on AMC Form 1024 results and all errors made by the supplier in measurement, check sequence of performing the check or recording results.
- (6) Take whatever on-the-spot corrective action is necessary, in conjunction with the supplier's authorized representative, and record on AMC Form 1024.
- (7) Post results of each accuracy check on the AMC Form 1025 by completing spaces 8 through 29. AMC Form 1025 can be used for direct recording of results and completion of AMC Form 1024 omitted.
- (8) If the summary indicates trends for which corrective action is desirable, in addition to the on-the-spot action taken, prepare and issue an AMC Form 1176, Corrective Action Record.

g. The QAREp will estimate the supplier's effectiveness by comparing the results of witnessing with the supplier's instruction, the procedural performance by the supplier and the recording of the results of inspection. Use the following method:

- (1) Count the number of possible characteristics for the established inspection instruction and the required report of the inspection. In counting, assign a count of one to each of the items listed below:
 - (a) Each step in a sequential procedure.
 - (b) Each measurement taken.
 - (c) Each characteristic inspected visually.

- (d) Each test performed.
 - (e) Each step in each test if the test requires sequential operation.
 - (f) Each measurement or reading required to be recorded on the report of the inspection.
- (2) Count the number of errors observed by the QARep. Assign a count of one to each error, such as those listed below:
- (a) Omission of a step in a sequential procedure.
 - (b) Each failure to follow prescribed sequence.
 - (c) Each step incorrectly accomplished.
 - (d) Each measurement incorrectly read.
 - (e) Each incorrect decision of conformance by visual means.
 - (f) Each test not performed.
 - (g) Each step omitted in a sequential test.
 - (h) Each step incorrectly accomplished in a sequential test.
 - (i) Each failure to follow prescribed sequence in a sequential test.
 - (j) Each measurement or reading not recorded as required.
 - (k) Each measurement or reading recorded incorrectly.
 - (l) Each required entry omitted from the report.
 - (m) Each required entry recorded incorrectly.
- (3) Compute the index of effectiveness using one of two formulas, and post on AMC Form 1025.

$$\text{Normal} \quad \text{IE}_{NC}: \quad \text{IE} \approx \frac{C-E}{C}$$

$$\text{Tightened} \quad IE_T C: \quad IE = \frac{C-E}{C+E}$$

Where IE is the index of effectiveness, C is the number of characteristics, E is the number of errors.

- (4) Comparison will be made by using one of two methods:
- (a) For normal comparison, use formula $IE_N C$. This method will be used initially and its use continued unless one of the following conditions occur:
 - 1. Two consecutive accuracy checks indicate ineffectiveness.
 - 2. Two or more checks in any consecutive run of seven checks indicate ineffectiveness.
 - (b) For tightened inspection, use formula $IE_T C$. This method will be used when one of the conditions in (a) above, occurs. Continue the use of this method until three consecutive accuracy checks indicate adequate effectiveness and resume normal comparison.
- (5) Compute and post to AMC Form 1025 the composite index of effectiveness for the last five checks. Continuous recomputation will be accomplished as follows:
- (a) Subtract from the previous total the characteristics inspected and the errors made in the earliest check and add corresponding figures for the current check.
 - (b) Compute the composite index of effectiveness for the last five checks. The formula $CIE_N C$ will be used when normal comparison was used during the last five checks, formula $CIE_T C$ will be used when tightened comparison was used during the last five checks. When both normal and tightened comparison have been used for the last five checks, the formula $CIE_T C$ shall be used. The formulas are as follows:

$$\text{Normal} \quad CIE_N C: \quad CIE \approx \frac{C_5 - E_5}{C_5}$$

$$\text{Tightened} \quad CIE_T C: \quad CIE \approx \frac{C_5 - E_5}{C_5 + E_5}$$

Where CIE is the composite index of effectiveness, C_5 is the total number of characteristics for the last five checks, and E_5 is the total errors for the last five checks.

- (6) Effectiveness will be considered adequate for one check when IE is equal to or greater than .95 for the formula in use. Effectiveness will be considered adequate for the last five checks when CIE is equal to or greater than .95 for the formula used.

h. If ineffectiveness is indicated, on-the-spot corrective action should be taken for trivial errors. An AMC Form 1176 should be issued for serious errors and the same trivial errors recurring frequently.

- (1) A serious error is one that is likely to result in a determination that nonconforming product inspected by use of the equipment is conforming.
- (2) A trivial error is one that is not likely to result in a determination that nonconforming product is conforming.

i. If a piece of equipment is rejected for inspection use, by either the supplier or the QAREp, the QAREp shall require the supplier to investigate the product recently inspected, using the equipment as well as correcting the equipment.

- (1) If the product is found to be conforming, no further action is required on inspection of product.
- (2) If the product is found to be nonconforming, continue investigating all product inspected by use of the equipment, in reverse order, until all nonconforming product has been located.

j. If there is continued poor inspection of the equipment, as evidenced by the issuance of two (2) or more AMC Forms 1176, without adequate corrective action being taken by the supplier, the QAREp will pursue the following course of action.

- (1) Notify the supplier that further use of the production equipment for inspection will not be an acceptable element of his system.
- (2) Notify the supplier that inspection must be performed using measuring instruments, gages, or other inspection equipment.
- (3) Discontinue acceptance of product until the supplier has provided inspection equipment or proven the product to be acceptable.

k. In order to be considered acceptable, the supplier's procedure must provide that inspection and reinspection of the production equipment to be used in lieu of inspection equipment must be performed by inspection or quality control personnel. Complete control by production personnel, master mechanic, set-up personnel, etc., will not be considered satisfactory.

l. One AMC Form 1025 should be maintained to include accuracy checks made on all jigs, fixtures and tool masters, unless the methods used to inspect the production equipment are radically different. If distinctly different methods are used, maintain one AMC Form 1025 for each method of inspection. Use of standard inspection equipment or optical equipment for inspection of the production equipment may be considered one method.

m. Inspection records generated by the supplier shall be evaluated in accordance with Part Three, Chapter 3, of this regulation.

SAMPLING TABLE — PRODUCTION EQUIPMENT USED FOR INSPECTION	
Total Number of Checks Made by Supplier Per Month	Number of Accuracy Checks Per Month
1	1
2-8	2
9-15	3
16-25	5
26-50	8
51 and over	13

Figure 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 7
INSPECTION OF CRITICAL CHARACTERISTICS

3-7-000. Scope. This chapter prescribes the quality assurance action involving inspection of critical characteristics. Instructions are given to cover various situations. Each situation requires specific quality assurance actions dependent upon the type of item and the system used by the supplier for control of quality. Each situation prescribes specific instructions for adjusting the amount of product verification to be performed.

3-7-001. Application. a. This chapter shall be used by inspection elements for inspection of critical characteristics unless specific procedures are in the procurement documents for inspection by the government, or unless directed otherwise by the quality assurance element.

b. The quality assurance element may direct the degree of application or place restrictions on the application of this chapter. Specific instructions will be received from the quality assurance element for certain individual procurements. Special requirements for classes of items or commodities will also be contained in Part Six of this regulation.

c. When no specific instructions are given, the QAREp will determine the applicable instructions in this chapter to be applied.

3-7-002. Procedure. a. For items that are relatively simple, inspection of critical characteristics will be as follows:

(1) When screening methods are used by the supplier to control critical defectives, the procedure will be as follows:

(a) The supplier will perform inspection for all critical characteristics on each unit of product.

(b) The supplier must establish and maintain procedures for removing critical defectives, and specific control of the defectives, to preclude the possibility of submission of critical defectives for acceptance.

(c) The QAREp shall perform inspection for all critical characteristics on each unit of product until 2,500 consecutive units have successfully passed inspection.

- (d) When the procedural controls required by (b) above, have been established and the inspection required by (c) above, has been accomplished, the QARep will perform sampling inspection for critical defects, providing the supplier's documented inspection system or quality program has been evaluated and found to be acceptable.
 - (e) Sampling inspection shall be the normal level of inspection for an AQL of .015% or equivalent, using the standard or plan being used for product verification inspection for classes of characteristics other than critical. However, the rejection number shall always be one.
- (2) When a supplier has established acceptable process controls for preventing the occurrence of critical defects, as distinguished from screening to remove defectives after they have occurred, the procedure will be as follows:
- (a) The supplier will be required to perform inspection for all critical characteristics on each unit of product in the order produced, until 2,500 consecutive units are produced free of critical defects.
 - (b) The QARep shall perform inspection for all critical characteristics on each unit of product until 920 units have successfully passed inspection, in the order in which they are inspected by the supplier.
 - (c) When the requirement in (b) above, has been satisfied, the QARep will perform sampling inspection for critical defects.
 - (d) Sampling inspection shall be the normal level of inspection for an AQL of .015% or equivalent, using the standard or plan being used for product verification inspection for classes of characteristics other than critical. However, the rejection number shall always be one.
 - (e) When the requirement in (a) above, has been satisfied and the QARep has found no critical defects during the supplier's production and inspection of the 2,500 consecutive units, the supplier may perform sampling inspection for critical defects. Sampling may be as specified in (d) above.
 - (f) The QARep will reduce inspection for critical defects at the time the supplier qualified for sampling inspection. Sample size for the reduced inspection will be one-fifth of the sample size required in (d) above.
- (3) The normal procedure to be followed when a critical defect is found,

during inspection in accordance with (1) or (2) above, is as follows:

(a) Both the supplier and the QAREp are performing 100% inspection:

1. If the defect is found by the supplier, he shall remove the defective unit.
2. If the defect is found by the QAREp, require the supplier to reinspect all units between the supplier's and the QAREp's inspection station, for that defect or type of defect.

(b) The supplier is performing 100% inspection and the QAREp is performing sampling inspection:

1. If a defect is found by the supplier, he shall remove the defective unit.
2. If a defect is found by the QAREp, he shall requalify for sampling inspection and require the supplier to reinspect all units between the supplier's and the QAREp's inspection station, and to reinspect all available units which have passed the QAREp's inspection station while he was sampling for that defect or that type of defect.

(c) Both the supplier and the QAREp are performing sampling inspection:

1. If a defect is found by the supplier, the supplier will be required to resume 100% inspection until requalified for sampling inspection, and to reinspect all available units for that characteristic, which have passed the supplier's inspection station.
2. If a defect is found by the QAREp, he shall requalify for sampling inspection and require the supplier to reinspect that characteristic on all available units, which have passed the supplier's inspection station.

b. For complex items, inspection of critical characteristics will be as follows:

- (1) The supplier shall be required to inspect all units for all characteristics classified as critical and for all characteristics that, if found defective, could be classified as critical.
- (2) At the start of production the QAREp shall inspect each unit for characteristics classified as critical, or for characteristics that, if found defective, could be classified as critical, after the supplier has performed inspection of these characteristics.

(3) The QAREp will use reduced inspection for the critical characteristics or defects classified as critical, providing the following conditions are satisfied:

- (a) The supplier's inspection system or quality program for critical characteristics has been evaluated and found to be acceptable.
- (b) A minimum of twenty consecutive units are found free of critical defects when inspected by the supplier, prior to presentation for acceptance inspection.
- (c) A minimum of thirty consecutive units are found free of critical defects when inspected by the QAREp for acceptance inspection.

(4) The initial reduced inspection by the QAREp, after the conditions of (3) above have been satisfied, is as follows:

- (a) Inspect the critical characteristics at the ratio of one-fifth. This inspection will be conducted by one of two methods:
 - 1. One out of five units will be inspected for all characteristics classified as critical, provided the units are selected at random for inspection.
 - 2. Each unit will be inspected for one-fifth of the characteristics classified as critical, provided the characteristics to be inspected are selected at random.
- (b) If a critical defect or defective is found by the QAREp while performing inspection at the reduced level of one-fifth, he will:
 - 1. Require the supplier to reinspect five units that have passed the QAREp's inspection station, and all units between the supplier's inspection station and the QAREp's inspection station.
 - 2. Resume 100% inspection until requalified for reduced inspection, as provided in (3) above.
 - 3. Require the supplier to correct his inspection system or quality program to prevent recurrence of a defective classified as critical.
- (c) Resume the reduced inspection at the level of one-fifth when requirements of (3) above, have been satisfied.

(5) Further reduced inspection by the QAREp will be as follows:

- (a) Inspect one-tenth of the units for critical characteristics or one-tenth of the critical characteristics of each unit, provided the results of inspection, at the level of one-fifth, are as follows:
 - 1. No critical defects have been found during the inspection of thirty consecutive units inspected for all critical characteristics or one hundred and fifty consecutive units inspected for one-fifth of the critical characteristics.
 - 2. The supplier has found no critical defects during the period that conditions in 1 above, were being met.
- (b) If a critical defect or defective is found by the QAREp while performing inspection at the reduced level of one-tenth:
 - 1. Require the supplier to reinspect ten units that have passed the QAREp's inspection station, and all units between the supplier's inspection station and the QAREp's inspection station.
 - 2. Resume 100% inspection until requalified for reduced inspection, as provided in (3) above.
 - 3. Require the supplier to correct his inspection system or quality program to prevent recurrence of a defective classified as critical.
- (c) Resume the reduced inspection at the level of one-tenth when requirements of (3) above, have been satisfied.

c. AMC Form 1176, Corrective Action Record, shall be issued when either of the following occurs:

- (1) A critical defect is found by the QAREp.
- (2) The supplier fails to take immediate corrective action when he finds a critical defect.

d. When an excessive number of critical defects are found, in addition to issuing an AMC Form 1176 for each defect found, further positive corrective action must be taken in addition to the reinspection and adjustment of the amount of inspection required in a or b above.

- (1) The number of critical defects found will be considered excessive under the following conditions:

- (a) Inspection being performed by the QAREp is lot-by-lot sampling and

critical defects are found under either of the following conditions:

1. In two consecutive lots.
 2. In three lots or more of any consecutive ten lots inspected.
- (b) Inspection being performed by the QARep is 100%, and a critical defect is found, the supplier is notified, and:
1. A second identical defect is found by the QARep during the same work day, or
 2. Three or more identical defects are found by the QARep during the next ten day work period.
- (2) The QARep will recommend to the officer administering the contract or order, that the supplier be notified:
- (a) Inspection by the government will be discontinued if action is not taken to accomplish two things:
1. Correct the conditions that allowed the defects to occur.
 2. Improve the efficiency of the system prior to presentation of product for acceptance inspection.
- (b) If inspection by the government is discontinued, it will not be resumed until positive corrective action is accomplished.

e. The QARep shall notify the quality assurance element, through channels, whenever a critical defect is found and the reinspection or screening required cannot be accomplished due to insufficient number of units in the plant.

f. The QARep may require requalification for sampling inspection of critical characteristics or require the supplier to screen material for critical characteristics, back to a particular process or unit when:

- (1) A process or procedure is changed.
- (2) There is a change in material.
- (3) There is an authorized change in product configuration.
- (4) Personnel are replaced or changed.

(5) Production is interrupted for reasons other than end of shift, day or week.

3-7-003. Recording results of inspection. a. Record results of inspection on the appropriate form in Part Five, applicable to the type of inspection; attributes lot-by-lot, attributes with AQL for each characteristic, variables, etc.

b. Normally, results will be posted to the same form being used in the quality assurance verification area for other classes of characteristics.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 8
VALIDATING SUPPLIER'S INSPECTION RESULTS

3-8-000. Scope. This chapter prescribes a method of verifying the quality of product by determining the validity of supplier's inspection results. The method prescribed requires that product has been subjected to attribute sampling inspection, using a plan from MIL-STD-105, MIL-STD-1235 or a government approved equivalent prepared by the supplier.

3-8-001. Application. a. This chapter is for use in conjunction with Supply and Logistics Handbook H 109. It applies when supplier's attribute inspection is performed on a lot-by-lot basis, or production interval for continuous sampling procedures.

b. When no specific method of product verification is specified for application by the government for a particular contract, purchase order or work order, the inspection element will determine use. The QAREp will assure that the supplier is conforming to his system and that his inspection records are available for analyzing inspection information.

c. The quality assurance element has the authority to direct the use of this procedure or place restrictions on the application of its provisions unless the responsible procurement activity has directed specific application. Specific instructions issued will be on individual procurements. Special requirements for a class of items or commodity are contained in Part Six of this regulation, as directed by the responsible procurement activity.

d. This procedure shall remain in effect provided the evidence continues to show that the supplier's system of inspection is operating satisfactorily and inspection findings are in agreement. When the supplier's records are not dependable and corrective action is not satisfactory, the QAREp shall institute appropriate independent product verification inspection and continue such inspection pending direction from the officer administering the contract, regarding the discontinuance of product acceptance.

e. Unless otherwise directed, the provisions of this procedure shall be progressively followed to the highest ratio.

3-8-002. Procedure. a. Prior to the implementation of this procedure, the QAREp shall:

- (1) Assure that the supplier is using an approved attribute sampling plan.
- (2) Assure that the product is manufactured to acceptable drawings, standards, specifications or other procurement documents.
- (3) Check for instructions from the quality assurance element relative to the use of this plan, i.e., specifying the sampling ratio "1," etc.
- (4) Determine the availability and adequacy of supplier's inspection instructions, check lists, or other inspection reference media.
- (5) Assure that the supplier's inspection records, containing inspection results, are complete and available.

b. When production has just started, the QAREP's sample size will be equal to that of the supplier, ratio $r = 1$, unless otherwise specified. However, a higher ratio, e.g., $r = 2$, may be selected provided the supplier's quality records are dependable, process average is satisfactory or quality history warrants. When the supplier is on reduced inspection, the highest ratio authorized for the QAREP is $r = 5$.

c. The QAREP shall conduct comparison sampling by performing the following functions for each defect, class of characteristic or each verification area. This inspection shall be accomplished on homogeneous production items, inspected by the supplier's sampling inspectors, and findings compared to the tables in H109.

- (1) Using the appropriate ratio, "r" select a sample drawn at random, independent from the same lot or production interval from which the supplier's sample was drawn.
- (2) Use the same inspection instructions used by the supplier.
- (3) Verify characteristics inspected by the supplier and record the verification results on the appropriate inspection form.
- (4) Compare the number of defects or defectives found in the individual sample against the supplier's findings to Table I.
- (5) Take action when required by e or f below.
- (6) Obtain from Table II the check rating number for the individual sample.
- (7) Accumulate the check ratings and compare the sum against the critical limits in Table III.

- (8) Take action when required by e below.
- (9) Shift to a higher step or ratio, d below, when five consecutive lots or production intervals are less than the action limit in Table I and the warning limit in Table III of H109.

d. The QAREp shall, unless otherwise directed, apply this procedure in the following manner:

- (1) Step 1, use ratio of one, $r = 1$, and perform comparison sampling inspection on each lot or production interval.
- (2) Step 2, use ratio of two, $r = 2$, and perform comparison sampling inspection on each lot or production interval.
- (3) Step 3, use ratio of three, $r = 3$, and perform comparison sampling inspection on five lots or production intervals, selected at random, out of ten.
- (4) Step 4, use ratio of five, $r = 5$, and perform comparison sampling inspection on five lots or production intervals, selected at random, out of 15.
- (5) Step 5, use ratio of eight, $r = 8$, and perform comparison sampling inspection on five lots or production intervals, selected at random, out of 20.

e. The QAREp shall take the following action:

- (1) When action limit in Table I is equaled or exceeded:
 - (a) On one of the first five lots submitted, institute the same action as required by (3) below, where action limit of Table III of H109 is equaled or exceeded.
 - (b) At any time after the first five lots or production intervals, issue an AMC Form 1176, Corrective Action Record, and when inspecting at a ratio higher than $r = 1$, retreat one r . Also, see f below.
- (2) When warning limit in Table III is equaled or exceeded but less than action limit, verbally notify the supplier of the findings, requesting that the condition be investigated, and continue at the inspecting " r ."
- (3) When action limit in Table III is equaled or exceeded:

- (a) Issue an AMC Form 1176 and inspect at $r = 1$. In addition, for lot-by-lot inspection, reject all lots where the number of defects or defectives exceed the acceptance number for the sampling plan being used by the supplier. In addition, for MIL-STD-1235, institute requirements for sampling inspection the same as that required of the supplier for the plan in use. This procedure will be continued until five consecutive lots or production intervals are less than the action limit in Table I and the warning limit in Table III of H109.
- (b) When five consecutive lots are less than action limit in Table I and the warning limit in Table III of H109, return to the ratio used when the action was required, confining product rejections to \underline{f} below.
- (c) Failure to obtain five consecutive lots less than action limit in Table I and Table III of H109, prior to reaching the eleventh lot or production interval, will be cause for recommending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.
- (d) In determining action for (c) above, it is possible that the supplier's records are not valid under the tables in H109, yet the quality of product submitted is equal to or less than the acceptance criteria for the specific inspection plan. When this occurs, the QAREp shall take the following actions:
 1. Notify the supplier to improve his recording procedures.
 2. Consider performing product verification inspection in accordance with the appropriate procedure described in Chapter 9 or 11 of Part Three, in lieu of this procedure.
 3. Continue verification inspection until the supplier's remedial action is found satisfactory and the recording of his inspection results is found dependable.

f. In addition to actions in e above, lots shall be rejected under the following conditions:

- (1) Under lot-by-lot inspection, whenever the action limit in Table I is equaled or exceeded and the acceptance number, based on the QAREp's sample size, is exceeded.
- (2) Under MIL-STD-1235, whenever the action limit in Table I is equaled or exceeded and the number of defects observed before "i" consecutive

units are exceeded during a production interval.

g. When it is found that the comparison sampling depletes the lot considerably, the QARep has the prerogative of pooling his verification inspection results in accordance with H109. Only the pooled results within a single "r" level shall be used.

h. In determining the over-all efficiency of the supplier's inspection system, the QARep shall accumulate the check ratings. When 30 lots have been reached, the QARep shall start the summation cycle by dropping off the first 20 lots and compute the remaining ten lot check ratings. This cycle shall be repeated and maintained as a continuing check for verifying the supplier's effectiveness using Table III.

3-8-003. Recording results of inspection. a. Instructions for recording results of comparison sampling inspection are provided in Part Five, Chapters 13 and 14.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 9
USE OF MIL-STD-105

3-9-000. Scope. This chapter prescribes a method of verifying the quality of product which has been previously subjected to inspection by the supplier under an attribute inspection plan, MIL-STD-105, or equivalent. The method prescribed requires that inspection elements use MIL-STD-105 with specific actions, other than those prescribed by the standard for the supplier, to adjust the amount of product verification inspection to be performed.

3-9-001. Application. a. This chapter applies when the supplier's attribute inspection is performed on a 100% or on a lot-by-lot sampling basis.

b. When no specific method of inspection or sampling plan is specified for application by the government for a particular contract or order, the inspection element will direct the QAREp performing acceptance inspection to use this chapter.

c. The quality assurance element is authorized to direct the degree of application or place restrictions on the application of this chapter. Specific instructions will be received from the quality assurance element for certain individual procurements. Special requirements for classes of items or commodities will also be contained in Part Six of this regulation.

d. The degree of verification inspection to be performed, normal, tightened or less than normal, may be determined by class, major or minor, or by characteristics when individual AQL's are assigned. This provides that inspection may require that larger samples be inspected on one class of characteristics or various characteristics. When this is the case, inspection will be accomplished as follows:

- (1) Draw the largest sample size required for inspection.
- (2) Inspect the number of items required for the smallest sample, for all characteristics.
- (3) Determine acceptance or rejection for the class or characteristic for which the smallest sample is applicable.
- (4) Continue inspection until larger samples for the class or characteristic requiring more inspection is completed.

- (5) Determine acceptance or rejection for the class or characteristic requiring larger samples.

e. MIL-STD-105D provides only four special inspection levels, S-1 to S-4 for small sample inspection, as opposed to eight levels, L-1 to L-8 in MIL-STD-105C. In the event it should be necessary to convert from one set of levels to the other, the following table will be used:

Table I

Small Sample Inspection Levels
(Conversion from one set to another)

<u>105C</u>	<u>105D</u>
L-1 & L-2	S-1
L-3 & L-4	S-2
L-5 & L-6	S-3
L-7 & L-8	S-4

3-9-002. Procedure. a. Normal product verification inspection by the QARep shall be as follows:

- (1) If the quality assurance provisions or requirements specify the inspection level and table of the standard for normal inspection, they shall be used.
- (2) If the quality assurance provisions or requirements do not specify the inspection level and table, Level II of Table I, with Table II-A, III-A or IV-A of the standard, shall be used for examination and measurement. Level S-3 of Table I, with Table II-A of the standard, shall be used for special testing.

b. When a lot is rejected under normal product verification inspection an AMC Form 1176, Corrective Action Record, will be issued by the QARep to the supplier.

c. When normal product verification inspection is in effect, tightened product verification inspection will be instituted when:

- (1) The switching procedures of MIL-STD-105 require that tightened inspection be instituted.
- (2) Individual items are of insufficient quantities to provide five lots and the items are grouped, tightened inspection will be instituted when

three lots out of a consecutive series of ten are rejected. When items are of sufficient quantities to provide five or more lots and the items are grouped, each item will be considered individually and tightened inspection will be determined by (1) above. When the quality of an item within a group warrants tightened inspection, that item will be removed from the group and handled individually until qualified for grouping with other items.

d. When tightened inspection is put into effect in accordance with c above, an AMC Form 1176 will be issued by the QAREp to the supplier.

e. Tightened product verification inspection by the QAREp shall be as follows:

- (1) If the quality assurance provisions or requirements specify the inspection level and table of the standard for tightened inspection, they shall be used.
- (2) If the quality assurance provisions or requirements do not specify the inspection level and table, Level II of Table I, with Table II-B, III-B or IV-B of the standard, shall be used for examination and measurement. Level S-3 of Table I, with Table II-B of the standard, shall be used for special testing.

f. If tightened inspection has been put into effect, the QAREp will resume normal product verification inspection as specified by the standard. Failure to qualify for normal inspection, prior to reaching the eleventh lot under tightened inspection, will be cause for recommending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.

g. Product verification inspection by the QAREp may be less than normal when one of the following conditions exist:

- (1) Current production is for the same item or similar items, following the completion of other contracts or orders, and inspection less than normal was being used.
- (2) The supplier's performance or quality history justifies the use of less than the normal level.
- (3) The switching procedure for reduced inspection of MIL-STD-105 has been satisfied.
- (4) When a supplier's documented system is determined acceptable and he is conforming to his inspection system or quality program. The inspection

tion of each lot by the QAREp, under normal product verification, reveals ten consecutive lots of the same or similar items have been inspected without rejection. This will be accomplished by class, major or minor, or characteristic when AQL's have been assigned to individual characteristics.

h. The first phase of less than normal product verification is reduced inspection. This phase shall be applied as follows:

- (1) If quality assurance provisions or requirements specify the inspection level and table of the standard for reduced inspection, they shall be used.
- (2) If quality assurance provisions or requirements do not specify the inspection level and table of the standard for reduced inspection, Level II of Table I, with Table II-C, III-C or IV-C of the standard, will be used for examination and measurement. Level S-3 of Table I, with Table II-C of the standard, will be used for special testing.

i. When reduced inspection is in effect, normal inspection shall be instituted if one of the following occurs on original inspection:

- (1) A lot or batch is rejected.
- (2) A lot or batch is considered acceptable under the special procedure specified in paragraph 10.1.4 of MIL-STD-105D.

j. When a lot or batch is rejected by the QAREp, during the application of reduced inspection, an AMC Form 1176 will be issued.

k. When return to normal inspection is required by g above, the QAREp will return to reduced product verification inspection when evidence of satisfactory corrective action is furnished by the supplier and four consecutive lots are accepted, under normal product verification inspection.

3-9-003. Minimum product verification inspection. a. The second phase of less than normal product verification inspection is minimum inspection. Minimum inspection will only be used when the supplier has an acceptable documented system for control of quality. Minimum inspection will be employed when a documented system has been accepted and inspection of each lot under reduced inspection reveals ten consecutive lots have been inspected without rejection.

b. Prior to starting minimum product verification inspection, the QAREp will:

- (1) Assure that no AMC Form 1176 is open that relates to the class of

characteristics or characteristic being considered for minimum product verification inspection.

- (2) Establish schedules so that selection of lots for minimum inspection will be at intervals unknown to the supplier.
- (3) Assure that lots are selected at random.

c. The QAREp will use the inspection level and tables of the standard used in performing inspection under 3-9-002 h above. Minimum product verification inspection will be applied in two steps, as follows:

- (1) In step one, schedule for inspection at the ratio of one-fifth of the lots submitted for inspection.
- (2) In step two, schedule for inspection at the ratio of one-tenth of the lots submitted for inspection.

d. The first step shall be used until ten consecutive lots have been inspected at the one-fifth ratio without rejection.

e. The second and final step of minimum product verification inspection will be used if the conditions in d above, are satisfied.

f. When minimum inspection is in effect, normal inspection shall be instituted if one of the following occurs on original inspection:

- (1) A lot or batch is rejected.
- (2) A lot or batch is considered acceptable under the special procedure specified in paragraph 10.1.4 of MIL-STD-105D.

g. When a lot or batch is rejected by the QAREp, during the application of either step of minimum inspection, an AMC Form 1176 will be issued.

h. After return to normal inspection as required by f above, the QAREp will return to the step of minimum product verification inspection in effect at the time return to normal was required when:

- (1) Evidence of satisfactory corrective action is furnished by the supplier, and
- (2) Four consecutive lots are accepted under normal product verification inspection.

3-9-004. Recording results of inspection. a. Instructions for recording results of product verification inspection are provided in Part Five, Chapters 15, 16, 17 and 18.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 10
USE OF MIL-STD-414

3-10-000. Scope. This chapter prescribes a method of verifying the quality of product which has been previously subjected to inspection by the supplier under a variables inspection plan, MIL-STD-414, or equivalent. The method prescribed requires that inspection elements use MIL-STD-414 with specific actions, other than those prescribed by the standard for the supplier, to adjust the amount of product verification inspection to be performed.

3-10-001. Application. a. This chapter applies when the supplier's variables inspection is performed on a lot-by-lot basis.

b. When no specific method of inspection or sampling plan is specified for application by the government for a particular contract or order, the inspection element will direct the QAREp performing acceptance inspection to use this chapter.

c. The quality assurance element is authorized to direct the degree of application or place restrictions on the application of this chapter. Specific instructions will be received from the quality assurance element for certain individual procurements. Special requirements for classes of items or commodities will also be contained in Part Six of this regulation.

d. The degree of verification inspection to be performed; normal, tightened or less than normal, will be determined by characteristic. This provides that inspection will require that larger samples be inspected on various characteristics. When this is the case, inspection will be accomplished as follows:

- (1) Draw the largest sample size required for inspection.
- (2) Inspect the number of items required for the smallest sample.
- (3) Determine acceptance or rejection for the characteristic for which the smallest sample is applicable.
- (4) Continue inspection until larger samples for other characteristics requiring more inspection are completed.
- (5) Determine acceptance or rejection for the characteristics requiring larger samples.

3-10-002. Procedure. a. Normal product verification inspection by the QARep shall be as follows:

- (1) If the quality assurance provisions or requirements specify the inspection level of Table A-2, that level of the standard shall be used.
- (2) If the quality assurance provisions or requirements do not specify the inspection level and table, Level IV of Table A-2, with Table B-3 of the standard, shall be used for examination and measurement.

b. When a lot is rejected under normal product verification inspection, an AMC Form 1176, Corrective Action Record, will be issued by the QARep to the supplier.

c. When normal product verification inspection is in effect, tightened product verification inspection will be instituted when:

- (1) The instructions of MIL-STD-414 requires that tightened inspection be instituted.
- (2) Individual items are of insufficient quantities to provide ten lots and the items are grouped, tightened inspection will be instituted when three lots out of a consecutive series of ten are rejected. When items are of sufficient quantities to provide five or more lots and the items are grouped, each item will be considered individually and tightened inspection will be determined by five lots, in lieu of ten, as referenced in paragraph B14.3 of MIL-STD-414. When the quality of an item within a group warrants tightened inspection, that item will be removed from the group and handled individually until qualified for grouping with other items.

d. When tightened inspection is put into effect in accordance with c above, an AMC Form 1176 will be issued by the QARep to the supplier.

e. Tightened product verification inspection by the QARep shall be as follows:

- (1) If the quality assurance provisions or requirements specify the inspection level and table of the standard for tightened inspection, they shall be used.
- (2) If the quality assurance provisions or requirements do not specify the inspection level and table, Level IV of Table A-2, with Table B-3 of the standard, shall be used for examination and measurement.

f. If tightened inspection has been put into effect, the QARep will resume

normal product verification inspection when the estimated process average of five consecutive lots under tightened inspection is equal to or less than the AQL. Failure to qualify for normal inspection, prior to reaching the eleventh lot under tightened inspection will be cause for recommending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.

g. Product verification inspection by the QAREp may be less than normal when one of the following conditions exist:

- (1) Current production is for the same item or similar items, following the completion of other contracts or orders, and inspection less than normal was being used.
- (2) The supplier's performance or quality history justifies the use of less than the normal level.
- (3) The instructions for reduced inspection of MIL-STD-414 have been satisfied.
- (4) When a supplier's documented system is determined acceptable and he is conforming to his inspection system or quality program. Inspection of each lot by the QAREp reveals preceding ten consecutive lots have been under normal inspection and none have been rejected, and the process average for the ten lots is equal to or less than the AQL.

h. The first phase of less than normal product verification inspection is reduced inspection. This phase shall be applied as follows:

- (1) If quality assurance provisions or requirements specify the inspection level and table of the standard for reduced inspection, they shall be used.
- (2) If quality assurance provisions or requirements do not specify the inspection level and table of the standard for reduced inspection, Level IV of Table A-2, with Table B-4 of the standard, shall be used for examination and measurement.

i. When product is rejected by the QAREp during the application of reduced inspection, an AMC Form 1176 will be issued and normal product verification inspection shall be resumed. When evidence of satisfactory corrective action is furnished by the supplier and four consecutive lots are accepted, and the estimated process average for the four lots is equal to or less than the AQL under normal product verification inspection, the QAREp shall again revert to reduced product verifi-

· cation inspection. Such corrective action shall be conclusive enough to reasonably reduce the probability of the recurrence of a rejection.

3-10-003. Minimum product verification inspection. a. The second phase of less than normal product verification inspection is minimum inspection. Minimum inspection will only be used when the supplier has an acceptable documented system for control of quality. Minimum inspection will be employed when a documented system has been accepted and the inspection of each lot under reduced inspection reveals the preceding ten consecutive lots have been inspected without rejection and the estimated process average for the ten lots is less than the AQL.

b. Prior to starting minimum product verification inspection the QAREp will:

- (1) Assure that no AMC Form 1176 is open that relates to the characteristic being considered for minimum product verification inspection.
- (2) Establish schedules so that selection of lots for minimum inspection will be at intervals unknown to the supplier.
- (3) Assure that lots are selected at random.

c. The QAREp will use the inspection level and table of the standard used in performing inspection under 3-10-002 h above. Minimum product verification inspection will be applied in two steps, as follows:

- (1) In step one, schedule for inspection at the ratio of one-fifth of the lots submitted for inspection.
- (2) In step two, schedule for inspection at the ratio of one-tenth of the lots submitted for inspection.

d. The first step shall be used until ten consecutive lots have been inspected at the one-fifth ratio without rejection.

e. The second and final step of minimum product verification inspection will be used if the conditions in d above, are satisfied.

f. When minimum inspection is in effect, normal inspection will be instituted when a lot is rejected on original inspection.

g. When a lot is rejected by the QAREp during the application of either step of minimum product verification inspection, an AMC Form 1176 will be issued.

h. After return to normal inspection, as required by f above, the QAREp will return to the step of minimum product verification inspection in effect at the time

return to normal was required when:

- (1) Evidence of satisfactory corrective action is furnished by the supplier, and
- (2) Four consecutive lots are accepted and the estimated process average for the four lots is equal to or less than the AQL under normal product verification inspection.

3-10-004. Recording results of inspection. a. Instructions for recording results of product verification inspection are provided in Part Five, Chapters 19 and 20.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 11
USE OF MIL-STD-1235

Section I. GENERAL

3-11-100. Scope. This chapter prescribes a method of verifying the quality of product when MIL-STD-1235, Single and Multilevel Continuous Sampling Procedures, is used by the supplier. The methods prescribed require that inspection elements use MIL-STD-1235 with specific actions, other than those prescribed by the standard for the supplier, to adjust the amount of product verification inspection to be performed.

3-11-101. Application. a. When the option in paragraph 8.2 (a) of the standard is required by contract or order, the inspection element shall perform all sampling and necessary product verification inspection in accordance with the option of the standard. This will require that the inspection element follow all requirements of the standard designated for sampling inspection and minimum product verification inspection (pars. 3-11-201, 3-11-301, 3-11-401 or 3-11-501) will not be allowed. The only reduced sampling inspection permitted by the standard is for CSP-A. When CSP-A of the standard is used, the reduced sampling frequency permitted by paragraph 8.5.6 of the standard may be followed.

b. When no option of the standard is specified in the contract or order, or the option in paragraph 8.2 (b) of the standard is specified, product verification by the inspection element shall be in accordance with the option in paragraph 8.2 (b) and the remainder of this chapter.

c. The quality assurance element has the authority to direct the degree of application or place restrictions on the application of this chapter. Specific instructions will be received from the quality assurance element for certain individual procurements. Special requirements for classes of items or commodities will also be contained in Part Six of this regulation.

3-11-102. Sampling plans. Procedures to be used by the QAREp of the four different types of continuous sampling provided by the standard are in the remaining sections of this chapter. Procedures for CSP-1, CSP-2, CSP-A and CSP-M are in Sections II, III, IV and V, respectively.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 11
USE OF MIL-STD-1235

Section II. SAMPLING PLAN CSP-1

3-11-200. Procedure. If CSP-1 of the standard is used, product verification inspection by the QAREp shall be as follows:

a. Assure that the supplier:

- (1) Uses frequency of sampling as provided by paragraph 7.2 of the standard.
- (2) Uses the specified "i" and "f" values in Table III of the standard.
- (3) Has inspected "i" units in succession, defect free, before depending upon sampling at the "f" frequency.
- (4) Institutes sampling inspection at the required "f" frequency when the conditions of paragraph 8.3.2 of the standard have been satisfied.
- (5) Institutes 100% inspection when the conditions of paragraph 8.3.3 of the standard occur.
- (6) Takes corrective action as required by the standard.

b. At the start of production the QAREp will perform normal product verification inspection at the required sampling frequency "f."

c. An AMC Form 1176, Corrective Action Record, will be issued by the QAREp to the supplier when:

- (1) A defective unit is found by the QAREp (verification inspector).
- (2) The conditions of paragraph 8.3.4 of the standard occur.
- (3) The conditions of paragraph 8.3.5 of the standard occur.

d. The QAREp will continue normal product verification inspection until ten consecutive production intervals have been inspected at the required sampling frequency "f" without issuing an AMC Form 1176.

3-11-201. Minimum product verification inspection. a. Minimum product verification inspection at one-fifth of the required frequency " $f/5$ " will be employed by the QAREp when qualified. There are three phases of minimum product verification inspection, as follows:

- (1) Phase 1, schedule for inspection of each production interval.
- (2) Phase 2, schedule for inspection at the ratio of one production interval out of five.
- (3) Phase 3, schedule for inspection at the ratio of one production interval out of ten.

b. The first phase shall be used when the requirements of 3-11-200 d above, have been satisfied.

c. The second phase shall be used when ten consecutive production intervals have been inspected under phase 1 without issuing an AMC Form 1176.

d. The third phase shall be used when ten consecutive production intervals scheduled for verification have been inspected under phase 2 without issuing an AMC Form 1176.

e. An AMC Form 1176 will be issued by the QAREp to the supplier and normal product verification inspection shall be resumed when:

- (1) A defective unit is found by the QAREp (verification inspector).
- (2) The conditions of paragraph 8.3.4 of the standard occur.
- (3) The conditions of paragraph 8.3.5 of the standard occur.

f. In addition to e above, the following procedure will be used:

- (1) When evidence of satisfactory corrective action is furnished by the supplier and four consecutive production intervals are inspected at the required frequency without issuing an AMC Form 1176, revert to the phase of minimum product verification inspection in effect when the action in e above, was required. The corrective action taken by the supplier shall be conclusive enough to reasonably reduce the probability of recurrence.
- (2) Failure to qualify four consecutive production intervals, prior to reaching the eleventh production interval, will be cause for recom-

mending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.

3-11-202. Recording results of inspection. a. Instructions for recording results of product verification inspection are provided in Part Five, Chapters 21 and 22.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 11
USE OF MIL-STD-1235

Section III. SAMPLING PLAN CSP-2

3-11-300. Procedure. If CSP-2 of the standard is used, product verification inspection by the QARep shall be as follows:

a. Assure that the supplier:

- (1) Uses frequency of sampling as provided by paragraph 7.2 of the standard.
- (2) Uses the specified "i" and "f" values in Table V of the standard.
- (3) Has inspected "i" units in succession, defect free, before depending upon sampling at the "f" frequency.
- (4) Institutes sampling inspection at the required "f" frequency when the conditions of paragraph 8.4.2 of the standard have been satisfied.
- (5) Institutes 100% inspection when the conditions of paragraph 8.4.3 of the standard occur.
- (6) Takes corrective action as required by the standard.

b. At the start of production the QARep will perform normal product verification inspection at the required sampling frequency "f."

c. An AMC Form 1176, Corrective Action Record, will be issued by the QARep to the supplier when:

- (1) Two defective units are found by the QARep (verification inspector) separated by fewer than "i" consecutive defect free sample units, during a sampling period, by the supplier.
- (2) The conditions of paragraph 8.4.4 of the standard occur.
- (3) The conditions of paragraph 8.4.5 of the standard occur.

d. The QARep will continue normal product verification inspection until ten

consecutive production intervals have been inspected at the required sampling frequency "f" without issuing an AMC Form 1176.

3-11-301. Minimum product verification inspection. a. Minimum product verification inspection at one-fifth of the required frequency " $f/5$ " will be employed by the QAREp when qualified. There are three phases of minimum product verification inspection, as follows:

- (1) Phase 1, schedule for inspection of each production interval.
- (2) Phase 2, schedule for inspection at the ratio of one production interval out of five.
- (3) Phase 3, schedule for inspection at the ratio of one production interval out of ten.

b. The first phase shall be used when the requirements of 3-11-300 d above, have been satisfied.

c. The second phase shall be used when ten consecutive production intervals have been inspected under phase 1 without issuing an AMC Form 1176.

d. The third phase shall be used when ten consecutive production intervals scheduled for verification have been inspected under phase 2 without issuing an AMC Form 1176.

e. An AMC Form 1176 will be issued by the QAREp to the supplier and normal product verification inspection shall be resumed when:

- (1) Two defective units are found by the QAREp (verification inspector) separated by fewer than "i" consecutive defect free sample units, during a sampling period, by the supplier.
- (2) The conditions of paragraph 8.4.4 of the standard occur.
- (3) The conditions of paragraph 8.4.5 of the standard occur.

f. In addition to e above, the following procedure will be used:

- (1) When evidence of satisfactory corrective action is furnished by the supplier and four consecutive production intervals are inspected at the required frequency without issuing an AMC Form 1176, revert to the phase of minimum product verification inspection in effect when the action in e above, was required. The corrective action taken by the

supplier shall be conclusive enough to reasonably reduce the probability of recurrence.

- (2) Failure to qualify four consecutive production intervals, prior to reaching the eleventh production interval, will be cause for recommending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.

3-11-302. Recording results of inspection. a. Instructions for recording results of product verification inspection are provided in Part Five, Chapters 21 and 22.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 11
USE OF MIL-STD-1235

Section IV. SAMPLING PLAN CSP-A

3-11-400. Procedure. If CSP-A of the standard is used, product verification inspection by the QAREp shall be as follows:

a. Assure that the supplier:

- (1) Uses the specified "i" "a" and "f" values in Table VII of the standard.
- (2) Has inspected "i" units in succession, defect free, before depending upon sampling at the "f" frequency.
- (3) Institutes sampling inspection at the required "f" frequency when the conditions of paragraph 8.5.2 of the standard have been satisfied.
- (4) Institutes 100% inspection when the conditions of paragraph 8.5.3 of the standard occur.
- (5) Takes corrective action as required by the standard.

b. At the start of production the QAREp will perform normal product verification inspection at the required sampling frequency "f."

c. An AMC Form 1176, Corrective Action Record, will be issued by the QAREp to the supplier when:

- (1) A defective unit is found by the QAREp (verification inspector).
- (2) The conditions of paragraph 8.5.4 of the standard occur.
- (3) The conditions of paragraph 8.5.5 of the standard occur.

d. The QAREp will continue normal product verification inspection until ten consecutive production intervals have been inspected at the required sampling frequency "f" without issuing an AMC Form 1176.

3-11-401. Minimum product verification inspection. a. Minimum product verification inspection at one-fifth of the required frequency " $f/5$ " will be employed

by the QAREp when qualified. There are three phases of minimum product verification inspection, as follows:

- (1) Phase 1, schedule for inspection of each production interval.
- (2) Phase 2, schedule for inspection at the ratio of one production interval out of five.
- (3) Phase 3, schedule for inspection at the ratio of one production interval out of ten.

b. The first phase shall be used when the requirements of 3-11-400 d above, have been satisfied.

c. The second phase shall be used when ten consecutive production intervals have been inspected under phase 1 without issuing an AMC Form 1176.

d. The third phase shall be used when ten consecutive production intervals scheduled for verification have been inspected under phase 2 without issuing an AMC Form 1176.

e. An AMC Form 1176 will be issued by the QAREp to the supplier and normal product verification inspection shall be resumed when:

- (1) A defective unit is found by the QAREp (verification inspector).
- (2) The conditions of paragraph 8.5.4 of the standard occur.
- (3) The conditions of paragraph 8.5.5 of the standard occur.

f. In addition to e above, the following procedure will be used:

- (1) When evidence of satisfactory corrective action is furnished by the supplier and four consecutive production intervals are inspected at the required frequency without issuing an AMC Form 1176, revert to the phase of minimum product verification inspection in effect when the action in e above, was required. Such corrective action shall be conclusive enough to reasonably reduce the probability of recurrence.
- (2) Failure to qualify four consecutive production intervals, prior to reaching the eleventh production interval, will be cause for recommending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.

3-11-402. Recording results of inspection. a. Instructions for recording results of product verification inspection are provided in Part Five, Chapters 21 and 22.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART THREE
QUALITY ASSURANCE TECHNIQUES

CHAPTER 11
USE OF MIL-STD-1235

Section V. SAMPLING PLAN CSP-M

3-11-500. Procedure. If CSP-M of the standard is used, product verification by the QAREp shall be as follows:

a. Assure that the supplier:

- (1) Uses applicable inspection level K.
- (2) Uses the specified "L" "f" "i" and "k" values as provided in Tables VIII-XIII of the standard.
- (3) Has inspected "i" units in succession, defect free, at the start of each production interval.
- (4) Institutes sampling inspection at the prescribed frequency "k" when the conditions of paragraph 8.6.2 of the standard have been satisfied.
- (5) Inspects "i" units before each level.
- (6) Institutes 100% inspection when required.
- (7) Takes corrective action as required by the standard.

b. At the start of production the QAREp will perform normal product verification inspection at the required sampling frequency with reduction in the inspection rate, as permitted by the sampling plan; however, never greater than the supplier's sampling rate. Samples will be selected at random without regard to samples inspected by the supplier's sampling inspector.

c. If a defect is found by the QAREp (verification inspector) during the supplier's sampling, inspect the next four units reaching the product verification inspection station and take action as follows:

- (1) If the defect or defects are the first found or separated by "i" units verified during a production interval, request the supplier to take action in accordance with paragraph 8.6.4 of the standard. This action

will be the same as if the defect or defects had been found by the supplier's sampling inspector.

- (2) If a second defect is found, not separated by "i" units verified, after action in (1) above:
 - (a) If no defects are found in the next four units reaching the verification inspection station, request the supplier to take action in accordance with paragraph 8.6.4 of the standard. This action will be the same as if the defect had been found by the supplier's sampling inspector.
 - (b) If a defect is found in one of the next four units reaching the inspection station, issue an AMC Form 1176, Corrective Action Record, and request the supplier to take action in accordance with paragraph 8.6.4 of the standard.
- (3) During the supplier's 100% inspection, issue an AMC Form 1176 when one or a combination of the following conditions exist:
 - (a) A defect is found in the verification samples.
 - (b) The conditions of paragraph 8.6.6 of the standard occur.
- (4) When evidence of satisfactory corrective action is furnished by the supplier, the QAREp may continue with verification inspection.

d. Continue on normal product verification inspection until ten consecutive production intervals have been inspected at the required frequency without issuing an AMC Form 1176.

3-11-501. Minimum product verification inspection. a. Minimum product verification inspection is inspection of one-fifth " $k/5$ " of the " k " frequency employed by the supplier's sampling inspector. Reduction or increase of " $k/5$ " i.e., " $k-1$ " to " $k-2$ " to " $k-3$ " etc., or " $k-3$ " to " $k-2$ " etc., will be current with the supplier's sampling inspector rather than the QAREp (verification inspector) using the "i" value for adjustment. There are three phases of minimum product verification inspection, as follows:

- (1) Phase 1, schedule for inspection of each production interval.
- (2) Phase 2, schedule for inspection at the ratio of one production interval out of five.

- (3) Phase 3, schedule for inspection at the ratio of one production interval out of ten.

b. The first phase shall be used when the requirements of 3-11-500 d above, have been satisfied.

c. The second phase shall be used when ten consecutive production intervals have been inspected under phase 1 without issuing an AMC Form 1176.

d. The third phase shall be used when ten consecutive production intervals scheduled for verification have been inspected under phase 2 without issuing an AMC Form 1176.

e. If a defect is found by the QARep (verification inspector) during the supplier's sampling, inspect the next four units reaching the product verification inspection station and take action as follows:

- (1) If the defect or defects are the first found or separated by "i" units verified during a production interval, request the supplier to take action in accordance with paragraph 8.6.4 of the standard. This action will be the same as if the defect had been found by the supplier's sampling inspector.
- (2) If a second defect is found, not separated by "i" units verified, after action in (1) above:
 - (a) If no defects are found in the next four units reaching the verification inspection station, request the supplier to take action in accordance with paragraph 8.6.4 of the standard. This action will be the same as if the defect had been found by the supplier's sampling inspector.
 - (b) If a defect is found in one of the next four units reaching the inspection station, institute normal product verification and issue an AMC Form 1176. Also, request the supplier to take action in accordance with paragraph 8.6.4 of the standard.
- (3) During the supplier's 100% inspection, issue an AMC Form 1176 and resume normal product verification inspection when one or a combination of the following conditions exist:
 - (a) A defect is found in the verification sample.
 - (b) The conditions of paragraph 8.6.6 of the standard occur.

f. In addition to e (2) (b) and (3) above, the following procedure will be used:

- (1) When evidence of satisfactory corrective action is furnished by the supplier and four consecutive production intervals are inspected at the required frequency without issuing an AMC Form 1176, revert to the phase of minimum product verification inspection in effect when the action in e (2) (b) and (3) above, was required. Such corrective action shall be conclusive enough to reasonably reduce the probability of recurrence.
- (2) Failure to qualify four consecutive production intervals, prior to reaching the eleventh production interval, will be cause for recommending suspension of inspection to the officer administering the contract or order. The administering officer must notify the supplier in writing of suspension of inspection.

3-11-502. Recording results of inspection. a. Instructions for recording results of product verification inspection are provided in Part Five, Chapters 21 and 22.

b. Instructions for completion of AMC Form 1176, Corrective Action Record, are in Part Five, Chapter 1.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 1
CORRECTIVE ACTION RECORD

5-1-000. Application. This chapter is applicable when preparing an AMC Form 1176, Corrective Action Record.

5-1-001. Instructions for completion. a. An example of a completed AMC Form 1176 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1176 are as follows:

- (1) Space 1. Enter prime supplier's name, if issued to a prime supplier. Enter subsupplier's name, if issued to a subsupplier.
- (2) Space 2. Enter prime contract, purchase order or work order number, if issued to the prime supplier. Enter subcontract, purchase order or work order number when issued to the subsupplier. When the system is applicable to more than one contract or order, enter "various."
- (3) Space 3. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (4) Space 4. Enter "SYS" for system deficiency, or "PROD" for product deficiency.
- (5) Space 5. Enter the AMC Form 1176 number. Numbers to be assigned consecutively for each supplier, preceded by "S" for a system deficiency, or "P" for a product deficiency, e.g., S-1, S-2, P-3, S-4, P-5, etc. When the subinspection element forwards an AMC Form 1176 to the prime inspection element for action with the prime supplier, the prime inspection element will enter the number.
- (6) Space 6. Enter reference information pertinent to, or justification for, issuing the AMC Form 1176, such as supplier's procedure and paragraph number, drawing or specification number, SQAP identification, etc. When issued by a subinspection element to a subsupplier, add the prime supplier's name and the prime contract number.
- (7) Space 7. Enter "X" in the appropriate block.
- (8) Space 8. Enter "X" in the appropriate block that describes the type

of deficiency. Space is provided to write in descriptive data, if not covered by those preprinted.

- (9) Space 9. Enter a description of the deficiency or error.
- (10) Space 10. Enter date found, signature, title and organization of initiator.
- (11) Space 11. Enter an explanation of action taken immediately by the initiator. When the initiator is an organization, element or individual other than the responsible QAREP, they should indicate what action was initiated to correct the deficiency. This information must include on-the-spot action taken.
- (12) Space 12. Enter date action was taken, signature, title and organization of initiator or government representative taking action.
- (13) Space 13. Enter name of the supplier's authorized representative, or when appropriate, title of person to whom the request is directed.
- (14) Space 14. Enter name of organization, segment or element to which the request is directed.
- (15) Space 15. Enter date issued.
- (16) Space 16. The QAREP shall indicate first, any immediate action taken over and above that contained in space 11 and second, action recommended to or requested of the supplier.
- (17) Space 17. Enter date forwarded, signature, title and organization of the QAREP.

Note. When the subinspection element forwards an AMC Form 1176 to the prime inspection element for action, spaces 5 and 13 through 17 will be completed by the prime inspection element. When the prime inspection element issues an AMC Form 1176 to the subinspection element for action, spaces 1 through 17 will be completed by the prime inspection element.

- (18) Space 18. This space is for an explanation by the person or organization to whom directed (space 13 or 14) of action taken to correct the existing deficiency.
- (19) Space 19. This space is for an explanation by the person or organiza-

tion to whom directed of action taken to prevent recurrence of the deficiency.

- (20) Space 20. Enter name of the person to whom the AMC Form 1176 is returned.
- (21) Space 21. Enter date, signature, title and organization of person responsible for action taken, described in spaces 18 and 19.

Note 1. When the prime inspection element forwards an AMC Form 1176 to the subinspection element for action, the subinspection element shall complete spaces 18 through 21 and return to the prime inspection element.

Note 2. When the subinspection element forwards an AMC Form 1176 to the prime inspection element for action, spaces 18 through 21 shall be completed by the prime supplier and returned to the subinspection element by the prime inspection element.

- (22) Space 22. Enter date of follow-up by responsible QARep.
- (23) Space 23. Enter information regarding follow-up.
- (24) Space 24. Person conducting follow-up shall enter signature or initials.
- (25) Space 25. Enter date follow-up was completed.
- (26) Space 26. Enter organization, element or segment to which copies are furnished.
- (27) Space 27. Enter signature of the person posting data from AMC Form 1176 to AMC Form 1177, Corrective Action Record Summary.
- (28) Space 28. Enter date posted.

Note. When Part IV is completed by the prime supplier and AMC Form 1176 is forwarded to the subinspection element by the prime inspection element, Parts V and VI will be accomplished by the subinspection element.

CORRECTIVE ACTION RECORD <small>(AMCR 715-509)</small>				
1. SUPPLIER F G C Motor Co.	2. CONT/NO/PO NO. Various	3. PLAN NO. 1	4. QA PROC SYS	5. CA RECORD N° S-5
6. REFERENCES Inspection instruction #7152 for Drawing #8757152, Rev. B.				
7. CLAYS OF DEFICIENCY: <input checked="" type="checkbox"/> SERIOUS <input type="checkbox"/> RECURRING <input type="checkbox"/> TRIVIAL				
8. TYPE OF DEFICIENCY: <input checked="" type="checkbox"/> INSPECTION <input type="checkbox"/> DESIGN <input type="checkbox"/> PROCEDURAL <input type="checkbox"/> RECORD <input type="checkbox"/> ENGINEERING <input type="checkbox"/> PROCESS				
PART I DEFICIENCY				
9. DESCRIPTION Supplier inspection record lot #63-3 reflects 2 defects found and lot accepted. Government SIA check reveals 5 defects on same sample. Lot should have been rejected.				
10. DATE FOUND 8/7/63 SIGNATURE <i>J. C. Butts</i> TITLE QAR ORGANIZATION N.Y. Proc Dist				
PART II ACTION BY INITIATOR OR GOVERNMENT REPRESENTATIVE				
11. EXPLANATION Supplier inspection supervisor, Mr. J. C. Bush, was notified of the deficiency and requested to reinspect the lot.				
12. DATE 8/7/63 SIGNATURE <i>J. C. Butts</i> TITLE QAR ORGANIZATION N.Y. Proc Dist				
PART III ACTION RECOMMENDED OR REQUESTED				
13. DIRECTED TO J. C. Bush		14. ORGANIZATION Q. C. Management		15. DATE 8/7/63
16. STATEMENT Request inspection personnel be instructed in proper use of thread gages. It is also requested that an investigation, indicating corrections made and what action will be taken to prevent this type of discrepancy from recurring. Complete Part IV and return by 9 August 1963.				
17. DATE 8/7/63 SIGNATURE <i>J. C. Butts</i> TITLE QAR ORGANIZATION N.Y. Proc Dist				

AMC 2 JAN 64 1176

(CONTINUED) CORRECTIVE ACTION RECORD PART IV ACTION TAKEN			
18. TO CORRECT DEFICIENCY Lot #63-3 screened for all noted defective characteristics. Lots #63-1 and #63-2 processed through this area previous to this date were also screened for like deficiencies.			
19. TO PREVENT REPETITION Investigation revealed that Sta. #6 inspectors had not used "NO-GO" gage element. All inspectors have been instructed in proper use of thread gages.			
20. COPY RETURNED TO J. O. Butts	21.	DATE 8/9/63	J. O. Butts <small>SIGNATURE</small>
		J. O. Butts <small>TITLE</small>	F G C MOORE CO <small>ORGANIZATION</small>
PART V FOLLOW-UP ACTION			
22. DATE	23. REMARKS	24. BY	25. DATE CLOSED
8/12/63	Inspection of lot #63-4 did not reveal any errors of similar nature. Proper use of thread gages in effect.		
		JOB	8/12/63
PART VI CONCLUSION			
26. COPIES FURNISHED TO QA Div., New York Procurement District		27. POSTED TO CAR SUMMARY J. O. Butts <small>SIGNATURE</small>	
		28. DATE 8/12/63	

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 2
CORRECTIVE ACTION RECORD SUMMARY

5-2-000. Application. This chapter is applicable when preparing an AMC Form 1177, Corrective Action Record Summary.

5-2-001. Instructions for completion. a. An example of a completed AMC Form 1177 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1177, are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number. When the summary is applicable to more than one contract or order, insert "various."
- (3) Space 3. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (4) Space 4. Enter dates of reporting period.
- (5) Space 5. Enter number of the AMC Form 1176, Corrective Action Record.
- (6) Space 6. Enter date when AMC Form 1176 was issued and date when action was completed.
- (7) Space 7. Enter check mark in applicable class of deficiency, i.e., serious or trivial.
- (8) Space 8. Enter department or area where deficiency originated.
- (9) Space 9. Enter applicable code if deficiency is related to product verification inspection.
- (10) Space 10. Enter applicable code if deficiency is related to system evaluation.
- (11) Space 11. Enter a brief description of the deficiency and the corrective action taken.

(12) Space 12. Enter initials of the QARep who prepared each AMC Form
1176.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 3
SYSTEM EVALUATION RESULTS

5-3-000. Application. This chapter is applicable when preparing an AMC Form 1178, System Evaluation Results, reflecting an evaluation of a supplier's system for control of product quality. AMC Form 1178 is designed for continued use over a number of system evaluations and will be used in this manner.

5-3-001. Instructions for completion. a. An example of a completed AMC Form 1178 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1178 are as follows:

(1) Space 1. Enter name of supplier.

(2) Space 2 a. Enter title or titles of check list.

Space 2 b. For Plans 1 and 4, insert IS, followed by the check list number or numbers. For Plan 2, insert 110, followed by the check list number to indicate use of Supply and Logistics Handbook H110.

(3) Space 3. Enter date AMC Form 1178 is prepared for use.

(4) Space 4. Enter contract, purchase order or work order number. When the system is applicable to more than one, and evaluation is applicable to all, insert "various."

(5) Space 5. Enter station, area or department covered by the evaluation. When one AMC Form 1178 is to cover all areas for which a check list applies, insert "all areas."

(6) Space 6. Enter schedule number, if used for control.

(7) Space 7. Enter log number, if used for control.

(8) Space 8. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.

(9) Space 9. Enter original schedule in space a, and any revisions in remaining spaces b through f, as the schedule is adjusted.

- (10) Space 10. Enter effective date of schedule or revised schedule.
- (11) Space 11. Enter each applicable item number from the check list identified in space 2 b. When a combination of check lists are used, enter the check list number, followed by the item number.
- (12) Space 12. Enter date of each evaluation as it is conducted.
- (13) Space 13. In column under date, enter results of evaluation, using code shown directly above space 13. Add "AD" for adequacy evaluation and "C" for conformance, e.g., "AD-ACC" "AD-I" or "C-ACC" "C-I."
- (14) Space 14. Enter over-all results, using applicable code.
- (15) Space 15. Enter numbers assigned to any AMC Forms 1176, Corrective Action Record.
- (16) Space 16. Enter initials or signature of evaluator.
- (17) Space 17 a. When deficiencies or inadequacies are revealed during evaluation, enter item number from space 11.

Space 17 b. Enter date deficiency was discovered.

Space 17 c. For serious deficiencies, enter a brief description and the number assigned to the AMC Form 1176 issued. For trivial deficiencies, enter a brief description of the deficiency and the on-the-spot corrective action taken. If the deficiency is a recurring trivial deficiency resulting in the issuance of an AMC Form 1176, include the number assigned to the AMC Forms 1176. Following the narrative descriptions, signatures of supplier and QARep will be entered.

- (18) Space 18. If subsequent follow-up action is required, enter date of anticipated follow-up.

SYSTEM EVALUATION RESULTS										
1. SUPPLIER										
2. FUNCTION OR OPERATION										
3. DATE										
4. CONT/NO/PO NO.										
5. STATION/AREA/DEPT										
6. SCHED NO.										
7. LOG NO.										
8. PLAN NO.										
9. SCHEDULED INTERVAL										
10. EFFECTIVE DATE										
11. DATE										
12. EVALUATIONS										
13. OVERALL RESULTS										
14. CONJECTIVE & TIME RECORD NUMBER										
15. VALUATOR										
F G C Motor Company										
Inspection & Testing Records										
IS-2										
25 Jul 63										
Various										
All Areas										
Weekly										
Bi-Monthly										
Monthly										
25 Jul 63										
13 Aug										
24 Sept										
AD-ADEQUACY										
ACC-ACCEPTABLE										
C-CONFORMANCE										
I-INADEQUATE OR NOT ACCEPTABLE										
N/C-NOT CHECKED										
R-REVISION										
N/A-NOT APPLICABLE										
TA-TENTATIVELY ACCEPTABLE										
1	AD-ACC		C-ACC	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC		
2	AD-ACC		C-I	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC		
3	AD-I	AD-ACC	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC		
4	AD-ACC		C-ACC	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC		
5	AD-ACC		C-ACC	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC		
OVERALL RESULTS	AD-I	AD-ACC	C-I	C-ACC	C-ACC	C-ACC	C-ACC	C-ACC		
CONJECTIVE & TIME RECORD NUMBER	S-2		S-3							
VALUATOR	JOB	JOB	JOB	JOB	JOB	JOB	JOB	JOB		

AMC FORM 1178
2 JAN 64

Figure 1, Front

5-3-002

[illegible]

Figure 1, Back

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 4
SYSTEM EVALUATION SUMMARY

5-4-000. Application. This chapter is applicable when preparing an AMC Form 1179, System Evaluation Summary.

5-4-001. Instructions for completion. a. An example of a completed AMC Form 1179 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1179 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number. When the system is applicable to more than one, and evaluation is applicable to all, insert "various."
- (3) Space 3. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (4) Space 4. Enter identification numbers of the applicable check lists. (Same as space 2 b, of AMC Form 1178, System Evaluation Results.)
- (5) Space 5. Enter months for one year, starting with month of first evaluation.
- (6) Space 6. Under the appropriate month, and in line with the appropriate identification number, enter information from space 14 of AMC Form 1178, reflecting the results of the last evaluation for the month.
- (7) Space 7. This space is for transfer to another AMC Form 1179 at the end of twelve evaluations. Enter the month for next evaluation.
- (8) Space 8. Enter total number of AMC Forms 1176, Corrective Action Record, issued during the month.
- (9) Space 9. Enter number of AMC Form 1176 not satisfactorily concluded at the end of each month, and include any AMC Forms 1176 from previous months that have not been concluded.

- (10) Space 10. Enter initials or signature of the person accomplishing the required posting.

AMC 2 FORM 64 1179

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 5
RECORD CHECK LIST


5-5-000. Application. This chapter is applicable when preparing an AMC Form 1180, Record Check List, for recording characteristics for a particular record and reflecting a schedule for record evaluation.

5-5-001. Instructions for completion. a. An example of a completed AMC Form 1180 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1180 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter by title or number the supplier's procedure or instruction covering the record to be evaluated.
- (3) Space 3. Enter number assigned to AMC Form 1180. All AMC Forms 1180 required for evaluation of a supplier's record will be serially numbered.
- (4) Space 4. Enter title of record. If there is no title, insert in parentheses a concise description.
- (5) Space 5. Enter number of supplier's form.
- (6) Space 6. Enter appropriate identification of supplier's area where records are used. If the record is used in many areas, and if the evaluation is to cover all areas, enter "plant-wide."
- (7) Space 7. When control of record evaluation is established by schedules or logs, enter appropriate numbers.
- (8) Space 8. Enter characteristic number from the master list of characteristics shown in Figure 2.
- (9) Space 9. Enter characteristic description, exactly as it appears on the master list of characteristics.
- (10) Space 10. If the supplier's record has numbered spaces or blocks, enter the number.

- (11) Space 11. Enter terminology from the supplier's record which compares with the characteristic in space 9.
- (12) Space 12. For Plan 1 this space is provided for use by the QAREp, at his option, for scheduling record evaluations. Three periods are shown and two spaces left for entry of other periods. Insert a check mark after the appropriate period, if this space is used. For Plan 2, schedules must be established. If the base period is less than one week or greater than one month, enter the base period in the blank space provided.
- (13) Space 13. Enter number of checks to be accomplished during the period.
- (14) Space 14. Enter effective date of schedule.
- (15) Space 15. When revisions are made, enter revision number or symbol.
- (16) Space 16. Enter date of each revision under revision number. This may or may not be the same as the effective date in space 14.
- (17) Space 17. Enter initials of the QAREp responsible for revising schedule.
- (18) Space 18. Enter date of original AMC Form 1180.
- (19) Space 19. Enter signature of the QAREp preparing original.

RECORD CHECK LIST												
(AMCR 715-509)												
1. SUPPLIER F G C Motor Co.				2. PROCEDURE/INSTRUCTION Inspection Procedure, Paragraph 12				3. CK LIST NO. 3				
4. TITLE OF RECORD Receiving Inspection Report				5. FORM NO. 142		6. STATION/AREA/DEPARTMENT Receiving		7. SCHEDULE/LOG NO.				
CHARACTERISTIC												
MASTER CHECK LIST ITEM						RECORD ITEM OR BLOCK						
8. NO.	9. DESCRIPTION					10. NO.	11. TERMINOLOGY					
1	Record Available											
2	Legibility											
4	Part Name					2	Item Name					
5	Part Number					3	Item Number					
7	Identity of Lot					4	Lot Identification					
9	Drawing Number and Revision					5	Drawing No. & Rev.					
13	Examinations and Tests required					6	Exam. & tests Req.					
14	Acceptable Quality Level					7	AQL No.					
15	Acceptance and rejection criteria					8	Acc. No. ___ Rej No. ___					
16	Quantity, total or lot sizes					9	Lot size					
18	Quantity inspected					10	Quantity inspected					
19	Quantity accepted					11	Quantity accepted					
20	Quantity rejected					12	Quantity rejected					
23	Description of nonconformance					13	Description of defects					
24	Disposition of product					14	Disposition					
35	Record distribution					15	Distribution of records					
37	Identification of subsupplier					1	Name of supplier					
39	Date or time of Inspection					16	Date					
40	Inspector's signature, Initials or Stamp					17	Signature					
SCHEDULE												
12. BASE PERIOD	13 CKS	14 EFF DATE	13 CKS	14 EFF DATE	13 CKS	14 EFF DATE	13 CKS	14 EFF DATE	13 CKS	14 EFF DATE	13 CKS	14 EFF DATE
WEEKLY	X	2	6 Aug 63									
BI-WEEKLY												
MONTHLY												
REVISION												
15. REVISION NO.												
16. DATE												
17. INITIALS												
						18. DATE	6 Aug 63		19. SIGNATURE, GOV'T REPRESENTATIVE			
								 John O. Butts				

 FORM 1180
 ANC 2 JAN 64

Figure 1.

MASTER LIST OF CHARACTERISTICS FOR RECORD EVALUATION	
Number	Characteristic
1.	Record available
2.	Legibility
3.	Date or number
4.	Part name
5.	Part number
6.	Part serial number
7.	Identity of lot or batch
8.	Identity of sample or item
9.	Drawing number and revision
10.	Item specification number and revision
11.	Material specification number and revision
12.	Station, department or area
13.	Examinations and tests required
14.	Acceptable quality level
15.	Acceptance and rejection criteria
16.	Quantity, total or lot size
17.	Quantity to be inspected
18.	Quantity inspected
19.	Quantity accepted
20.	Quantity rejected
21.	Examinations and tests completed
22.	Number of defects or defectives
23.	Description of nonconformance
24.	Disposition of product
25.	Control chart limits
26.	Values computed or posted
27.	Change order
28.	Approved or certified inspection equipment
29.	Qualified operator identification
30.	Error or accuracy limits of equipment
31.	Laboratory or report number
32.	Evidence of prior examination or test
33.	Evidence of re-examination or retest
34.	Next reinspection date
35.	Record distribution
36.	Certification
37.	Identification of subsupplier
38.	Unauthorized change to record entries
39.	Date or time of inspection
40.	Inspector's signature, initials or stamp

Figure 2.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 6
RECORD EVALUATION RESULTS

5-6-000. Application. This chapter is applicable when preparing an AMC Form 1022, Record Evaluation Results, for recording results of evaluation of supplier's inspection system or quality program and test records.

5-6-001. Instructions for completion. a. An example of a completed AMC Form 1022 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1022 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number. When not limited to one, enter "various."
- (3) Space 3. Enter date of the evaluation.
- (4) Space 4. Enter evaluation number. Evaluations for a specific record will be numbered consecutively.
- (5) Space 5. Enter title of supplier's record.
- (6) Space 6. Enter form number of supplier's record.
- (7) Space 7. Enter appropriate identification of supplier's area where records were generated.
- (8) Space 8. Enter number assigned to AMC Form 1180, Record Check List.
- (9) Space 9. When controls are established by schedule, enter appropriate number.
- (10) Space 10. When controls are established by log number, enter appropriate number.
- (11) Space 11. Enter approximate number of records generated since the last check.

- (12) Space 12. Enter inspection degree, i.e., normal, tightened or reduced.
- (13) Space 13. Enter number of records in the sample.
- (14) Space 14. Enter number assigned to any AMC Forms 1176, Corrective Action Record, issued as a result of this record evaluation.
- (15) Space 15. The blocks that do not correspond to numbers recorded in space 8 of AMC Form 1180 may be crossed out. When errors are found, record by a tally in the upper portion of appropriate block number, identical with the number of the applicable characteristic. Error tally will be identified with the following code in the lower portion: Serious errors "S" and trivial errors "T."
- (16) Space 16. After evaluation is completed:
- Space 16 a. Enter number of serious errors.
- Space 16 b. Enter number of trivial errors.
- Space 16 c. Enter total number of errors observed.
- (17) Space 17. Enter characteristic number, followed by a brief description of error found. Repeat for each type of error found in the sample. If no errors are found, enter "no errors found."
- (18) Space 18. Enter a brief description of corrective action taken for each type of error indicated in space 17. The action may indicate a verbal agreement between the QARep and the supplier that corrective action will be taken before other records are processed. The action could also indicate immediate corrective action was taken.
- (19) Space 19. Enter date of action reflected in space 18 and signature.
- (20) Space 20. It is desirable that the supplier's representative contacted confirms action by dating and signing. In the event of refusal, the supplier's representative contacted should be indicated in space 18 and initialed by the QARep.
- (21) Space 21. Enter descriptive results of follow-up. All corrective actions taken or to be taken require follow-up by the QARep at realistic time intervals. Satisfactory corrective action, concerning an error, should not only be an act concerning the correction of the error discovered but include future preventative measures.

- (22) Space 22. When satisfactory action has been taken by the supplier,
enter date and signature.

RECORD EVALUATION RESULTS (AMCR 715-509)													
1. SUPPLIER F G C Motor Co.				2. CONT/PO/NO NO. Various				3. DATE 6 Aug 63		4. ... AT ... 1			
5. TITLE OF RECORD Receiving Inspection Record				6. FORM NO. 142		7. STATION/AREA/DEPT Receiving		8. ... 3		9. ... 3			
9. SCHEDULE NO.		10. LOG NO.		11. NO. RECORDS PROCESSED 75		12. Insp. DEGREE Normal		13. SAMPLE SIZE 10		14. ... S-4			
CHAR NO.	15.	1	2	3	4	5	6	7	8	9	10	11	12
STROKE TALLY OF ERRORS	11	X	X	X	X	X	X	X	X	X	X	X	X
	12	X	X	X	X	X	X	X	X	X	X	X	X
	13	X	X	X	X	X	X	X	X	X	X	X	X
	14	X	X	X	X	X	X	X	X	X	X	X	X
17. EXPLANATION													
Characteristic No. 9 - Inspection record for Part No. 40525 cited wrong revision date 5/1/60 in lieu of 1/7/63.													
Characteristic No. 39 - Date of inspection omitted, Part Nos. 40525, 40526, 40527, 40528 and 40529.													
18. ACTION													
Characteristic No. 9 - Corrective Action Record, No. S-4 issued to QC Manager.													
Characteristic No. 39 - QC Manager alerted of deficiency and on-the-spot corrective action was taken. Supplier's inspection personnel were cautioned to preclude a recurrence.													
19.													
7 Aug 63 DATE				John O Butts SIGNATURE, GOVERNMENT REPRESENTATIVE				7 Aug 63 DATE				J.C. Bush SIGNATURE, SUPPLIER REPRESENTATIVE	
21. FOLLOW UP ACTION													
Review of similar records for like deficiencies during the past 4 days revealed corrective action was taken. (Characteristic No. 39)													
22.													
17 Aug 63 DATE				John O Butts SIGNATURE, GOVERNMENT REPRESENTATIVE									
AMC FORM 1022 2 JAN 64													

Figure 1.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 7
RECORD EVALUATION SUMMARY

5-7-000. Application. This chapter is applicable when preparing an AMC Form 1023, Record Evaluation Summary.

5-7-001. Instructions for completion. a. An example of a completed AMC Form 1023 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1023 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number. When not limited to one, enter "various."
- (3) Space 3. Enter title of supplier's record.
- (4) Space 4. Enter form number of supplier's record.
- (5) Space 5. Enter number assigned to AMC Form 1180, Record Check List.
- (6) Space 6. When controls are established by schedule or log, enter appropriate number.
- (7) Space 7. Enter appropriate identification of supplier's area where records were generated.

Note. Spaces 8 through 10 and 12 through 16 provide for posting of the results of 22 record evaluation checks. All evaluations will be posted in the order in which they were made.

- (8) Space 8. Enter evaluation number. Each time an evaluation is conducted an annotation is required.
- (9) Space 9. Enter date the evaluation was made.
- (10) Space 10. Enter number of records in the sample.

- (11) Space 11. Enter numerical identification of characteristics for which errors were observed.
- (12) Space 12. Enter in the columns under the appropriate evaluation number and to the right of the characteristic number, the number of serious and trivial errors observed.
- (13) Space 13. Enter total number of errors observed as recorded for each evaluation conducted. Zero shall be entered when no errors are observed.
- (14) Space 14. Enter total number of errors in last five checks.
- (15) Space 15. Enter numbers assigned to AMC Forms 1176, Corrective Action Record, resulting from the particular record evaluation. When repetitive like errors are found from a study of spaces 11 and 12, or out-of-control conditions are apparent from study of a chart, and an AMC Form 1176 is issued, enter the number of that AMC Form 1176 also.
- (16) Space 16. Enter initials of the evaluator for each check conducted.

Note. When an AMC Form 1022, Record Evaluation Results, is being used, entries in spaces 17 through 22 of AMC Form 1023 are not required. If AMC Form 1023 is being used for direct recording of record evaluation, the following instructions apply:

- (17) Space 17. Enter serial number of the evaluation.
- (18) Space 18. Enter a description of each error observed and corrective action agreed upon with the supplier's representative. Include also the action to preclude recurrence. When an AMC Form 1176 is issued, a brief description of the error may be all that is required, followed by, "Corrective Action Record No. _____, issued."
- (19) Space 19. Enter initials of supplier's representative responsible for corrective action.
- (20) Space 20. If subsequent follow-up action is required, enter date of anticipated follow-up.
- (21) Space 21. Enter date the supplier completed satisfactory corrective action.
- (22) Space 22. Enter initials of the QARep performing the corrective action follow-up.

RECORD EVALUATION SUMMARY (FANCER 715-509)														
1. SUPPLIER F C Motor Co.		2. CONT. PO/NO NO. Various		3. TITLE OF RECORD Receiving Inspection		4. FORM NO. 142		5. CK LIST NO 3		6. SCHED/LOG NO.		7. STAT/AREA/DEPT Receiving		
8. EVAL NO.	9. DATE	10. SAMP SIZE	11. CHAR NO.	12.	NUMBER OF ERRORS									
					S	T	S	T	S	T	S	T	S	T
9	1													
39	5													
40														
37														
24														
13														
13. TOTAL					1	5	0	1	1	0	2	1	0	
14. TOTAL LAST 5 CHECKS												3	9	
15. CORRECTIVE ACTION RECORD NUMBER(S)					S-4							S-5		
16. INITIALS					903	908	900	900	908	903				

AMC FORM 1023
2 JAN 64

5-7-002

[illegible]

Figure 1, Back

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 8
ACCURACY INSPECTION WORKSHEET

5-8-000. Application. This chapter is applicable when preparing an AMC Form 1024, Accuracy Inspection Worksheet, to record the following: a. Determination and evaluation of supplier's effectiveness in the performance of inspection.

b. Evaluation and verification of supplier's use of:

- (1) Final inspection equipment within an inspection system.
- (2) In-process and final inspection equipment within a quality program.
- (3) Mechanical and electrical standards and calibration thereof.

c. Evaluation and verification of supplier's use of production equipment when used for inspection in lieu of inspection equipment.

5-8-001. Instructions for completion. a. When using Method I or Method II in determining the supplier's inspection effectiveness, spaces 22 through 28 and 32 do not apply. When using Method III, spaces 14 a, 15 through 21 do not apply.

b. When using AMC Form 1024 to reflect evaluation and verification results of 5-8-000 b and c above, spaces 22 through 29 and 32 do not apply.

c. An example of a completed AMC Form 1024 for Method I is shown in Figure 1 and for Method III in Figure 2.

d. Detailed instructions for preparation of AMC Form 1024 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number. When not limited to one, enter "various."
- (3) Space 3. Enter station, area or department name and identification number.
- (4) Space 4. Enter assigned schedule or log number, if used for control.

- (5) Space 5 a. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.

Space 5 b. Enter "SIA" (supplier's inspection accuracy), "MTE" (supplier's use of measuring and test equipment) or "PE" (production equipment used as a media of inspection).

- (6) Space 6. Enter check number. Checks should be serially numbered.
- (7) Space 7. When verifying supplier's inspection effectiveness, enter name of the unit. If material is grouped by method of fabrication or processing, enter "various" or designate the class of items. When verifying inspection equipment or production equipment used as a media of inspection, enter the group identification or unit.
- (8) Space 8. Enter drawing, part or serial number. For grouped equipment, enter the group identification.
- (9) Space 9. Enter revision or modification number, etc.
- (10) Space 10. Enter title or number of the supplier's inspection instruction utilized in the verification.
- (11) Space 11. Enter name or identification number of supplier's inspector who performed inspection.
- (12) Space 12. Enter date verification check was made.
- (13) Space 13. For Methods I and II, prior to starting accuracy inspection, enter descriptive or numbered identification of defects found by the supplier. As accuracy inspection progresses, make similar entries if defects are found by the QAREP which the supplier did not find. For Method III, make a similar entry for all defects observed by the QAREP.
- (14) Space 14 a. Enter, above the diagonal, the number of defects observed by the supplier.
- Space 14 b. Enter, below the diagonal, the number of defects observed by the QAREP.
- (15) Space 15. Enter errors observed by the QAREP for the characteristic.
- (16) Space 16. Check block identifying Method I or II when verifying supplier's inspection effectiveness. When verifying inspection equipment

or production equipment used as a media of inspection, check block "other."

- (17) Space 17. Enter number of units in sample reinspected.
- (18) Space 18. For Plan 1, leave blank. For Plan 2, when using formula $IE_N C$ and $IE_T C$, enter total characteristics reinspected.
- (19) Space 19. Enter total number of errors observed.
- (20) Space 20. For Plan 1, leave blank. For Plan 2, enter as applicable, "N" or "T" to indicate normal or tightened comparison.
- (21) Space 21. For Plan 1, leave blank. For Plan 2, compute index of effectiveness and enter in this space.
- (22) Space 22. When Method III is used, check block.
- (23) Space 23. Enter either " n_1 " or " n_c " and enter sample size for each class.
- (24) Space 24. Enter assigned acceptable quality level for each class of defects.
- (25) Space 25. Enter supplier's process average for each class of defects.
- (26) Space 26. Enter the S value for each class for the sample size in space 23.
- (27) Space 27. Enter the C value for each class for the sample size in space 23.
- (28) Space 28. Enter the number of defective units for each class of defects.
- (29) Space 29. Enter lot identification.
- (30) Space 30. Enter quantity in lot.
- (31) Space 31. Indicate, by checking appropriate block, whether results of verification are determined as acceptable or unacceptable.
- (32) Space 32. When using Method III, check appropriate block to indicate results of comparison of the supplier's process average with the QARep's results.

- (33) Space 33. Enter numbers of all AMC Forms 1176, Corrective Action Record, issued.
- (34) Space 34. Enter signature of QAREP who performed the check.
- (35) Space 35. Enter a description for each type of error observed and corrective action agreed upon by the QAREP and the supplier's representative, together with action taken to preclude recurrence. When an AMC Form 1176 is issued, a brief description of the errors is all that is required, followed by "Corrective Action Record No. _____, issued."
- (36) Space 36. Request the supplier to initial this space or enter initials of the supplier's representative responsible for corrective action.
- (37) Space 37. If subsequent follow-up action is required, enter date of anticipated follow-up.
- (38) Space 38. Enter date supplier completed satisfactory corrective action.
- (39) Space 39. Enter initials of the QAREP performing follow-up action.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 9
ACCURACY INSPECTION SUMMARY

5-9-000. Application. This chapter is applicable when preparing an AMC Form 1025, Accuracy Inspection Summary, to record the following: a. Supplier's effectiveness in the performance of inspection.

b. Supplier's use of:

- (1) Final inspection equipment within an inspection system.
- (2) In-process and final inspection equipment within a quality program.
- (3) Mechanical and electrical standards and the calibration thereof.

c. Supplier's use of production equipment when used as a media of inspection.

5-9-001. Instructions for completion. a. When using Method I or Method II in determining the supplier's inspection effectiveness, spaces 13 a and 15 a through 20 a, do not apply. When using Method III, spaces 13 b and 15 b through 20 b, do not apply.

b. When using AMC Form 1025 to reflect evaluation and verification results of 5-9-000 b and c above, spaces 7, 13 a and 15 a through 20 a, do not apply.

c. An example of a completed AMC Form 1025 for Method I or II is shown in Figure 1, and for Method III in Figure 2.

d. Detailed instructions for preparation of AMC Form 1025 are as follows:

- (1) Space 1. Enter name of the manufacturer. When the manufacturer is a subsupplier, enter the prime supplier's name beneath, identifying both as either prime or sub.
- (2) Space 2 a. For Plan 1, leave blank. For Plan 2, enter the schedule level "N" normal, "R" reduced, or "M" minimum, and the effective date.

Space 2 b. Enter the number of checks to be conducted during a one month period. If not applicable, enter the schedule interval in the

space provided and line out "Per Mo."

- (3) Space 3. Enter schedule or log number, if used for control.
- (4) Space 4. Enter contract, purchase order or work order number. When not limited to one, enter "various."
- (5) Space 5 a. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.

Space 5 b. Enter "SIA" (supplier's inspection accuracy) "MTE" (supplier's use of measuring and test equipment) or "PE" (production equipment used as a media of inspection).

Space 5 c. Enter Method I, II or III when checking supplier's inspection accuracy.
- (6) Space 6. Enter supplier's station, area or department name and identification number. When applied to gages that are grouped and located throughout the plant, enter "all areas."
- (7) Space 7. Enter type of inspection conducted by the supplier, e.g., 100%, sampling - 105, continuous - 1235, etc.
- (8) Space 8. Enter check number.
- (9) Space 9. Enter proper digits in heading to indicate calendar year. Enter date verification check was made.
- (10) Space 10. Enter drawing, part or serial number. For grouped equipment, enter the group identification.
- (11) Space 11. Enter title or number of the inspection instruction utilized in the verification.
- (12) Space 12. Enter quantity in lot.
- (13) Space 13 a. Enter sample size for each class.

Space 13 b. For Plan 1, enter the number of units in the sample. For Plan 2, enter the number of units in the sample or the total number of characteristics.
- (14) Space 14. This space may be left blank when AMC Form 1024, Accuracy Inspection Worksheet, is being used and the summary is being

posted from worksheets. This space will be completed as follows when AMC Form 1025 is used as both worksheet and summary:

For Method I and Method II, when errors are observed, enter descriptive or numbered identification of characteristics. For Method III, make a similar entry for defects observed by the QAREP. In the column below, opposite the appropriate check number, enter the number of errors for Methods I and II or the number of defects for Method III.

- (15) Space 15 a. Enter " n_1 " or " n_c " representing the sample recorded in space 13 a, separating class by a diagonal drawn in recording block.

Space 15 b. For Plan 1, leave blank. For Plan 2, enter "N" normal or "T" tightened comparison.

- (16) Space 16 a. Enter total number of defectives for major characteristics.

Space 16 b. Enter total number of errors observed.

- (17) Space 17 a. Enter total number of defectives for minor characteristics.

Space 17 b. For Plan 1, leave blank. For Plan 2, enter total units or characteristics inspected in the last five checks.

- (18) Space 18 a. Enter supplier's process average for major characteristics.

Space 18 b. For Plan 1, leave blank. For Plan 2, enter total errors observed in the last five checks.

- (19) Space 19 a. Enter supplier's process average for minor characteristics.

Space 19 b. For Plan 1, leave blank. For Plan 2, enter computed index of effectiveness for current check.

- (20) Space 20 a. Enter C value for each class for the sample size in space 13 a.

Space 20 b. For Plan 1, leave blank. For Plan 2, compute and enter composite index of effectiveness for the last five checks.

- (21) Space 21. Enter numbers of AMC Forms 1176, Corrective Action Record, issued.

- (22) Space 22. Enter initials or identification number of supplier's inspector who performed inspection.

Note. The reverse side of AMC Form 1025 is for use when a review is required by review of posted information and when used without AMC Form 1024.

- (24) Space 24. Enter the check number from space 8.
- (25) Space 25. Enter a description for each type of error observed and the corrective action agreed upon by the QAREp and the supplier's representative, together with action taken to preclude recurrence. When AMC Form 1176 is issued, a brief description of the error is to be included that is required, followed by "Corrective Action Record No. _____ issued."
- (26) Space 26. Request the supplier to initial this space or enter initials of supplier's representative responsible for corrective action.
- (27) Space 27. If subsequent follow-up action is required, enter date of anticipated follow-up.
- (28) Space 28. Enter date the supplier completed satisfactory corrective action.
- (29) Space 29. Enter initials of the QAREp performing the corrective action follow-up.

Worksheet discontinued on Check #6 and results posted directly to this summary.

Figure 1, Front

5-9-004

24. CK NO.	25. DESCRIPTION OF ERRORS AND ACTION TAKEN	26. SUPERVISOR INITIALS	27. FOLLOW UP DATE	28. REC- TION DATE	29. GOVT REP
6	#102 Dim. .505-.506, ok by mach shop insp #141. Gov'ts check "No-Go" plain plug enters hole entire length. Mr. Dynek, Mach. Shop Insp. Supv., instructed inspectors to use both "Go" and "No-Go" elements on characteristics for which such gages are provided.	JD	8-12	8-12	908
7	#101 Dim. .125-.127, ok by Mach. Shop Insp. #122. Gov'ts check .1238. #110 1/4-28-UNF-3B internal thd., ok by Mach. Shop Insp. #122. Gov'ts check "No-Go" thd. plug enters full depth. Mr. Dynek ordered lot screened for characteristics #101 & #110 and gages checked for accuracy. Promised disciplinary action if necessary.	JD	8-15	8-14	908
8	#102 Dim. .3258-.3268 ok by Mach Shop Insp. #137, Gov'ts check .3253. #106 Dim. .4516-.4526 ok by Mach. Shop Insp.; Gov'ts check .4513. Mr. Dynek's investigation revealed inspector used micrometer for measurement in lieu of comparator. Ordered lot screened and instructed inspection personnel to use comparator and air gages on close tolerance dimensions.	JD	8-15	8-14	908
9	#114 Dim. .325-.328, ok by Mach. Shop Insp. #143, Gov'ts check .329. Mr. Dynek ordered lot screened for characteristic #114 and promised closer supervision of inspectors.	JD	8-19	8-18	908

[illegible]

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 10
VERIFICATION CHECK LIST

5-10-000. Application. This chapter is applicable when preparing an AMC Form 1181, Verification Check List.

5-10-001. Instructions for completion. a. An example of a completed AMC Form 1181 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1181 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number. When not limited to one, enter "various."
- (3) Space 3. Enter drawing or part number.
- (4) Space 4. Enter applicable revision or engineering change order number.
- (5) Space 5. Enter nomenclature of the part.
- (6) Space 6. Enter quality assurance verification station or area where the inspection is to be performed.
- (7) Space 7. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (8) Space 8. Enter acceptable quality level (AQL) used for each class of defects.
- (9) Space 9. If AMC Form 1181 is a list of selected characteristics from another list that is numbered, enter the same number assigned to the characteristic on the original list. If the AMC Form 1181 is made from an unnumbered list, drawing, specification, etc., assign a number to each characteristic. Enter number of each characteristic or test assigned, e.g., 01, 02, 09, 10, 11, etc.
- (10) Space 10. Enter a description of the characteristic or test. If an AQL is assigned to each characteristic, rather than to a class, precede the description by the AQL.

(11) Space 11 a. When an AMC Form 1181 is revised, enter revision number.

Space 11 b. Enter date of each revision under revision number.

Space 11 c. Enter initials of the QAREp approving the revision.

(12) Space 12. Enter date of original listing of characteristics or tests.

(13) Space 13. Enter signature of QAREp approving the listing.

[illegible]

5-10-002

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 11
VERIFICATION RECORD-SHORT TERM PRODUCTION

5-11-000. Application. This chapter is applicable when preparing an AMC Form 1182, Verification Record-Short Term Production.

5-11-001. Instructions for completion. a. An example of a completed AMC Form 1182 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1182 are as follows:

- (1) Space 1. Enter number of the plan in use, as contained in the title of a chapter of Part Two.
- (2) Space 2. Enter name of supplier. When the supplier is the subsupplier, enter prime supplier's name beneath. Identify each with "prime" or "sub" in parentheses after the name.
- (3) Space 3. Enter contract, purchase order or work order number.
- (4) Space 4. Enter inspection element performing the evaluation.
- (5) Space 5. Enter "X" in the appropriate square designating the type of supplier's system.
- (6) Space 6. Enter quality assurance requirements from contract or order, e.g., Standard Form 32, specification SQAP, etc.
- (7) Space 7 a. When Plan 3 is in use, enter 2-3-III to indicate requirements listed in Part Two, Chapter 3, Section III, of this regulation. When Plan 4 is in use, enter the criteria used to evaluate the supplier's system, e.g., ISCL (Inspection System Check List) for the check list in Plan 1, or H110, referenced in Plan 2.

Space 7 b. Enter the criteria used to evaluate the supplier's product, e.g., MIL-STD-105 or H109.
- (8) Space 8. When Plan 3 is in use, leave blank. Enter date supplier's procedures were accepted when using Plan 4.
- (9) Space 9. Enter date for each system evaluation.

- (10) Space 10. Enter the system requirements, such as records, inspection equipment, the specification and paragraph number if approval of processes, such as phosphate coating, plating, welding, etc., is required, or any other specific system requirement.
- (11) Space 11. Enter "X" in the appropriate column, indicating requirement for system was acceptable (Acc) or inadequate (I) for the date of evaluation.

Note. If Plan 4 is in effect for repetitive short term contracts or orders and AMC Form 1182 is being used to record product verification for individual contract or order files, across spaces 9, 10 and 11, enter "See AMC Form 1178, System Evaluation Results."

- (12) Space 12. Enter proper digits in heading to indicate calendar year. Enter date product verification was performed.
- (13) Space 13. Enter the number assigned to the inspection lot. Resubmitted lots should be identified by using the original lot number, followed by "A" the first time a lot is resubmitted, "B" the second time, etc.
- (14) Space 14 a. Enter the applicable part or drawing number being verified.
- Space 14 b. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (15) Space 15. Enter quantity of units of product in the inspection lot.
- (16) Space 16. Enter title of each class of defect contained in the procedure under which the sampling inspection was conducted, i.e., critical, major, minor.
- (17) Space 17. Indicate the sampling procedure being used, e.g., when MIL-STD-105 is used, the following coding will be used:

<u>Inspection Degree</u>	<u>Inspection Level</u>	<u>Sampling Plan</u>
Normal ----- N	I (or) S1	Single ---- S
Tightened ----- T	II S2	Double --- D
Reduced ----- R	III S3	Multiple -- M
	S4	
Minimum-Step One --- R (1/5)		
Minimum-Step Two --- R (1/10)		

Example: Normal inspection, Level II, single sampling, is indicated by the code, "N II S."

- (18) Space 18. Enter the applicable acceptable quality level (AQL) used for each class of defect listed in space 16.
- (19) Space 19. As applicable, enter number of units of product included in the first sample for each class of defect. If double or multiple sampling plans are used, the number included in the first sample and the cumulative quantity in all samples inspected will be entered in the columns headed "1st" and "Cum," respectively.
- (20) Space 20.
- (a) When characteristics are classified and coded in section 4 of the specification or other procurement document, indicate the coded number assigned to the defective characteristic in line with the appropriate class indicated in space 16.
- (b) When characteristics are not classified by procurement document:
1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.
 2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.
- (c) The defective characteristic number will be entered in the columns of space 20 for the appropriate class. Enter the defect or characteristic numbers and as a superscript, the number of times each defect was observed, e.g., 112², 215⁴, 219³.
- (21) Space 21. Enter total number of defective units for percent defective or when defects per hundred units are used, enter the number of defects

for each class. If double or multiple sampling plans are used, the number in the first sample and the cumulative number found in all samples inspected will be entered in the columns headed "1st" and "Cum," respectively.

- (22) Space 22. Enter a check mark to indicate whether the lot was accepted or rejected for each class.
- (23) Space 23. Enter initials of the QAREp performing the inspection.
- (24) Space 24. Enter signature of the responsible QAREp submitting AMC Form 1182.
- (25) Space 25. Enter same date as indicated in space 9, when the system is found to be inadequate during system evaluation.
- (26) Space 26. When the system is found to be inadequate during system evaluation, enter the requirement as indicated in space 10.
- (27) Space 27. When an AMC Form 1176, Corrective Action Record, is issued regarding the deficiencies or inadequacies revealed during system evaluation, enter the AMC Form 1176 number.
- (28) Space 28. Enter any pertinent remarks relative to the system evaluation.
- (29) Space 29. Enter same date as indicated in space 12, when a lot is rejected during product verification.
- (30) Space 30. When a lot is rejected during product verification, enter the inspection lot number, as indicated in space 13.
- (31) Space 31. When an AMC Form 1176 is issued regarding the rejection of a lot, enter the AMC Form 1176 number.
- (32) Space 32. Enter any pertinent remarks relative to the product verification.

VERIFICATION RECORD - SHORT TERM PRODUCTION

[illegible]

Figure 1, Front

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 12
SUPPLIER QUALITY HISTORY

5-12-000. Application. This chapter is applicable when preparing an AMC Form 1183, Supplier Quality History.

5-12-001. Instructions for completion. a. An example of a completed AMC Form 1183 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1183 are as follows:

- (1) Space 1. Enter name of supplier. When the supplier is the subsupplier, enter prime supplier's name beneath. Identify each with "prime" or "sub" in parentheses after the name.
- (2) Space 2. When Plan 3 is in use, leave blank. Enter date of supplier's procedures when using Plan 4.
- (3) Space 3. When Plan 3 is in use, leave blank. Enter revision date of supplier's procedures when using Plan 4.
- (4) Space 4. When Plan 3 is in use, leave blank. Enter date supplier's procedures were accepted when using Plan 4.
- (5) Space 5. Enter the number of the quality assurance plan in use.
- (6) Space 6. Enter contract, purchase order or work order number.
- (7) Space 7. Enter proper digits in heading to indicate calendar year. Enter date of each product verification and system evaluation performed. (Entry will be in the order in which they were performed.)
- (8) Space 8. Enter nomenclature of item under procurement.
- (9) Space 9. Enter drawing or part number of each item.
- (10) Space 10. Insert results of system evaluation using the following code: "AD" for adequacy, "C" for conformance, "ACC" for acceptable, "I" for inadequate or not acceptable, and "N/C" for not checked, e.g., "AD-ACC" to indicate adequacy acceptable, "C-I" to indicate con-

formance not acceptable, etc.

- (11) Space 11. Enter a number for each lot inspected in the particular quality assurance verification area, in the order in which they were inspected, starting with one, without regard to contract, purchase order or work order, or items when items are grouped. Each time a lot is rejected or the inspection level is to be changed, when the next lot is inspected, start a new series with number one. (This number is not the inspection lot number but is a number to readily identify a point at which the level of inspection should be changed or a new tally of consecutive lots is required.)

- (12) Space 12 a. Enter lot size.

Space 12 b. Enter sample size for each class.

- (13) Space 13 a. Enter check mark or "X" when using normal inspection.

Space 13 b. Enter check mark or "X" when using tightened inspection.

Space 13 c. Enter check mark or "X" when using reduced inspection or when minimum inspection is in effect, enter 1/5 or 1/10 to indicate the step being used.

- (14) Space 14 a. Enter check mark or "X" when lot is accepted.

Space 14 b. Enter check mark or "X" when lot is rejected. Resubmitted lots will be completely recorded at the bottom of the form.

- (15) Space 15. Enter the number of AMC Forms 1176, Corrective Action Record, issued.

- (16) Space 16. Enter initials of the QAREp who performed the inspection.

SUPPLIER QUALITY HISTORY												3- REVIS ON DATE		4- ACCEPTANCE DATE							
1- SUPPLIER		2- DATE SUPPLIER PROCEDURES			SYSTEM EVALUATION		PRODUCT VERIFICATION						15- NO. OF CAR S ISSUED		16- QA REP						
Small Arms Co.		8- NOMENCLATURE		9- PLAN NO.		10- DETERMINATION		11- LOT TALLY		12- LOT SIZE		13- DEGREE		14- D SP		15- NO. OF CAR S ISSUED		16- QA REP			
6- CONT/NO. NO.		7- DATE		8- NOMENCLATURE		9- PLAN NO.		10- DETERMINATION		11- LOT TALLY		12- LOT SIZE		13- DEGREE		14- D SP		15- NO. OF CAR S ISSUED		16- QA REP	
6- CONT/NO. NO.		7- DATE		8- NOMENCLATURE		9- PLAN NO.		10- DETERMINATION		11- LOT TALLY		12- LOT SIZE		13- DEGREE		14- D SP		15- NO. OF CAR S ISSUED		16- QA REP	
DA-20-018-AMC	8/15	Receiver Assy	8720519	AD-I																	
-54321(W)																					
DA-20-018-AMC	9/2	Receiver Assy	8720519	AD-ACC																	
-54321(W)																					
DA-20-018-AMC	9/5	Receiver Assy	8720519	C-ACC																	
-54321(W)																					
DA-20-018-AMC	9/6	Receiver Assy	8720519	C-ACC																	
-54321(W)																					
DA-20-018-AMC	9/16	Cleaning Rod	8705332	C-ACC																	
-54321(W)																					
DA-20-018-AMC	9/23	Receiver Assy	8720519	C-ACC																	
-54321(W)																					
DA-20-018-AMC	9/25	Cleaning Rod	8705332	C-ACC																	
-54321(W)																					
DA-20-018-AMC	9/27	Butt Plate	8810763	C-ACC																	
-54244(W)																					
DA-20-018-AMC	9/30	Cleaning Rod	8705332	C-ACC																	
-54321(W)																					
DA-20-018-AMC	10/1	Receiver Assy	8720519	C-ACC																	
-54321(W)																					
DA-20-018-AMC	9/9	Receiver Assy	8720519																		
-54321(W)																					

Figure 1.

5-12-002

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 13
WORKSHEET FOR VALIDITY OF INSPECTION RESULTS

5-13-000. Application. This chapter is applicable when preparing an AMC Form 1184, Worksheet for Validity of Inspection Results.

5-13-001. Instructions for completion. a. An example of a completed AMC Form 1184 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1184 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter contract, purchase order or work order number.
- (3) Space 3. Enter nomenclature of the part.
- (4) Space 4. Enter date validity inspection was performed.
- (5) Space 5. Enter part number or drawing number and revision.
- (6) Space 6. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc. The QAREp will use the same criteria used by the supplier.
- (7) Space 7. Enter identification of the quality assurance verification area where inspection was performed.
- (8) Space 8. Enter type of inspection conducted by the supplier, e.g., sampling - 105, continuous - 1235.
- (9) Space 9. Enter quality assurance plan in use, as contained in Part Two, Chapter 1, 2, 3, etc.
- (10) Space 10. Enter number assigned to the inspection lot or production interval. Resubmitted lots should be identified by using the original lot number, followed by "A" the first time a lot is resubmitted, "B" the second time, etc.
- (11) Space 11. Enter quantity of units of product in the inspection lot or production interval.

- (12) Space 12. Enter signature of the QAREp preparing AMC Form 1184.
- (13) Space 13. Enter name of the class of defect or the number of the characteristic being recorded.
- (14) Space 14. Enter AQL for the class of defect or individual characteristic being recorded.
- (15) Space 15. Enter number of units in the supplier and government samples, in the spaces provided.
- (16) Space 16.
- (a) When characteristics are classified and coded in section 4 of the specification or other procurement document, indicate by class the coded number assigned to the defective characteristic.
 - (b) When characteristics are not classified by the procurement document:
 - 1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.
 - 2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.
 - (c) The defective characteristic number will be entered in space 16. If the characteristic is defective on five units, the coded number would be followed by quantity of defectives as a superscript, e.g., 212⁵.
 - (d) When inspection by AQL per characteristic is being used, entries in this space are not necessary.
- (17) Space 17. Enter "r" value for the ratio of the government's sample size to the supplier's sample size, as follows:

<u>Ratio of Government's Sample to Supplier's Sample</u>	<u>r =</u>
1/1	1
1/2	2
1/3	3
1/5	5
1/8	8

- (18) Space 18. Enter total number of defects found, as follows:
- (a) Under column headed d_s , enter total number of defects observed by the supplier.
 - (b) Under column headed d_c , enter total number of defects observed in government sample.
- (19) Space 19. Enter appropriate $d_c A$ value from Table I of Handbook H109, Statistical Procedures for Determining Validity of Suppliers Attributes Inspection.
- (20) Space 20. Enter check ratings from H109, as follows:
- (a) Space 20 a. Enter cumulative check rating from space 20 c of AMC Form 1184, used to record inspection of the same class of defect or characteristic on the previous lot. When this is the first inspection or the start of a new cumulative series, an entry is not necessary.
 - (b) Space 20 b. Enter individual check rating, determined from Table II of H109, for the class of defect or characteristic.
 - (c) Space 20 c. Enter total of spaces 20 a and 20 b above.
- (21) Space 21. Each time a series of inspection lots or production intervals is started, enter in this space a cumulative lot number beginning with one, to indicate the number of lots reflected in the cumulative check rating recorded in space 20 c.
- (22) Space 22. Enter values of the warning and action limits from Table III of H109 for the number of lots recorded in space 21.
- (23) Space 23. Enter explanation of actions required or taken as a result of the validity inspection, and when AMC Form 1176, Corrective Action Record, is issued, insert "Corrective Action Record No. _____ issued."

Figure 1.

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PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 14
SUMMARY RECORD VALIDITY INSPECTION

5-14-000. Application. This chapter is applicable when preparing an AMC Form 1185, Summary Record Validity Inspection.

5-14-001. Instructions for completion. a. An example of a completed AMC Form 1185 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1185 are as follows:

- (1) Space 1. Enter name of the manufacturer. When the manufacturer is a subsupplier, enter the prime supplier's name beneath, identifying both as either "prime" or "sub."
- (2) Space 2. Enter contract, purchase order or work order number.
- (3) Space 3. Enter nomenclature of the part.
- (4) Space 4. Enter dates of the reporting period.
- (5) Space 5. Enter applicable part or drawing number and revision.
- (6) Space 6. Enter source of inspection provisions or criteria, e.g., specification, SQAP, supplier's inspection check list, drawings, etc.
- (7) Space 7. Enter identification of the quality assurance verification area.
- (8) Space 8. Enter signature of the QARep submitting AMC Form 1185.
- (9) Space 9. Enter type of inspection conducted by the supplier, e.g., sampling - 105, continuous - 1235.
- (10) Space 10. Enter name of the class of defect or the number of the characteristic being recorded.
- (11) Space 11. Enter acceptable quality level (AQL) for the class of defect or characteristic being recorded.
- (12) Space 12. Enter quality assurance plan in use, as contained in Part

Two, Chapter 1, 2, 3, 4, etc.

- (13) Space 13. Enter proper digits in heading to indicate calendar year validity inspection was performed. Enter date validity inspection was performed.
- (14) Space 14. Enter number assigned to the inspection lot or production interval.
- (15) Space 15. Enter quantity of units of product in the inspection lot or production interval.
- (16) Space 16. Enter quantity of units in the supplier's inspection sample.
- (17) Space 17. Enter ratio of the supplier's sample size to the government sample size. (Same as space 17 of AMC Form 1184).
- (18) Space 18. Enter number of defects found, as follows:
 - (a) Under column headed d_s , enter number of defects observed in the supplier's sample.
 - (b) Under column headed d_c , enter number of defects observed in the government's sample.
- (19) Space 19. Enter "A" when the number of defects observed in the government's sample exceeds or equals the appropriate d_{cA} value in Table I of Handbook H109, Statistical Procedures for Determining Validity of Suppliers Attributes Inspection.
- (20) Space 20. Enter the individual check rating for the appropriate "r" obtained from Table II of H109. (Same as space 20 b of AMC Form 1184).
- (21) Space 21. Enter cumulative check rating for the lots in the series. (Same as space 20 c of AMC Form 1184). When the AMC Form 1185 is filled, enter lot number brought forward in the space provided, at the head of the column on the following page.
- (22) Space 22. When a series of lots or production intervals is started, enter in this space the cumulative lot number beginning with one, to indicate the quantity of lots reflected in the cumulative total in space 21. When AMC Form 1185 is filled, enter the cumulative lot number in the space provided at the head of the column on the following page.

- (23) Space 23. Compare cumulative check rating in space 21 with the critical values of Table III of H109, and when necessary, make the following entries:
- (a) When the cumulative check rating exceeds the warning value, but is less than the action value, enter "W" in the appropriate column.
 - (b) When the cumulative check rating exceeds the action value, enter "A" in the appropriate column.
- (24) Space 24. Enter a brief explanation of actions required or taken as a result of the validity inspection, and when AMC Form 1176, Corrective Action Record, is issued, insert "Corrective Action Record No. _____ issued." When additional space is required, insert "See reverse side" and complete spaces 25 through 28 on the reverse side of the form.
- (25) Space 25. Enter number assigned to the inspection lot or production interval on which required action is being taken.
- (26) Space 26. Enter class of defect or characteristic number (from space 10) to which the entry being made applies.
- (27) Space 27. Enter number of any AMC Forms 1176 issued.
- (28) Space 28. Enter explanation of actions required or taken as a result of validity inspection.

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PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 15
WORKSHEET FOR ATTRIBUTES INSPECTION - AQL PER CLASS OF DEFECTS

5-15-000. Application. This chapter will be used when preparing an AMC Form 1186, Worksheet for Attributes Inspection - AQL per Class of Defects.

5-15-001. Instructions for completion. a. Examples of completed AMC Form 1186 are shown in Figure 1 for percent defective, and Figure 2 for defects per hundred units.

b. Detailed instructions for preparation of AMC Form 1186 are as follows:

- (1) Space 1. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (2) Space 2. Enter name of supplier.
- (3) Space 3. Enter identification of the quality assurance verification area where the inspection was accomplished.
- (4) Space 4. Enter date product verification was performed.
- (5) Space 5. Enter applicable part or drawing number.
- (6) Space 6. Enter applicable revision date or engineering change order.
- (7) Space 7. Enter nomenclature of the part.
- (8) Space 8. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (9) Space 9. Enter number assigned to the inspection lot. Resubmitted lots should be identified by using the original lot number, followed by "A" the first time a lot is resubmitted, "B" the second time, etc.
- (10) Space 10. Enter quantity of units of product in the inspection lot.
- (11) Space 11. If applicable, enter specification number and revision pertaining to the part.
- (12) Space 12. Enter name of the responsible inspection element.

- (13) Space 13. Enter title of each class of characteristics contained in the procedure under which the sampling inspection was conducted, i.e., critical, major or minor, or Group A, B or C.
- (14) Space 14. Indicate sampling table and procedure being used. For example, when MIL-STD-105 is used, the following coding may be used.

<u>Inspection Degree</u>	<u>Inspection Level</u>	<u>Sampling Plan</u>
Normal ----- N	I (or) S1	Single ----- S
Tightened ----- T	II S2	Double ----- D
Reduced ----- R	III S3	Multiple ----- M
	S4	
Minimum-Step One --- R (1/5)		
Minimum-Step Two --- R (1/10)		

Example: Normal inspection, Level II, single sampling, is indicated by the code, "105 N II S."

- (15) Space 15. Enter applicable acceptable quality level (AQL) used for each class of defects.
- (16) Space 16. Enter acceptance and rejection numbers for the first sample and if applicable, for the cumulative sample.
- (17) Space 17. Enter number of units of product included in the first sample for each class of defects. If double or multiple sampling plans are used, the number included in the first sample and the cumulative quantity in all samples inspected will be entered in the columns headed "1st" and "Cum," respectively.
- (18) Space 18. Enter total number of defective units of product, or total defects per hundred units, the total defects found in the sample for each class. If double or multiple sampling plans are used, the number found in the first sample and the cumulative number found in all samples inspected will be entered in the columns headed "1st" and "Cum," respectively.
- (19) Space 19. Enter total number of pieces returned to the supplier.
- (20) Space 20. Enter "X" in the appropriate square if lot was accepted or rejected.
- (21) Space 21. Enter signature of the QAREp performing the inspection.

(22) Space 22.

- (a) When characteristics are classified and coded in section 4 of the specification or other procurement document, indicate by class the coded number assigned to the defective characteristic.
- (b) When characteristics are not classified by the procurement document:
 1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.
 2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.

- (c) The coded defective characteristic number will be entered in this space.

(23) Space 23. Enter a brief description of the defect, e.g., thread under-size, hole elongated, etc.(24) Space 24. When reporting percent defective, for each defect found, enter a check mark (fig. 1). When reporting defects per hundred units, enter the total number of defects for each unit (fig. 2). Results will be recorded in the appropriate column under first and second sample, opposite the description of the defect.(25) Space 25.

- (a) When reporting percent defective: Tally the defectives by placing a check mark opposite the class of defect in the proper column whenever one or more defect classification appears in the column for the unit (fig. 1); a unit containing more than one defect in the same defect classification is counted as one defective in that particular defect classification; a unit containing more than one defect classification is counted one defective in each defect classification.

- (b) When reporting defects per hundred units: Enter the number of defects for each unit opposite the class of defect, in space 26 (fig. 2).
- (26) Space 26. Enter title of each class of defect for which defects are found.
- (27) Space 27. Enter any information pertaining to the inspection of the item which is not included in AMC Form 1186. In particular, the QAREp should furnish the reason for any abnormally high number of defectives in any inspection lot.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 16
SUMMARY RECORD ATTRIBUTES INSPECTION - AQL PER CLASS OF DEFECTS

5-16-000. Application. This chapter is applicable when preparing an AMC Form 1187, Summary Record Attributes Inspection - AQL per Class of Defect.

5-16-001. Instructions for completion. a. Examples of completed AMC Forms 1187 are shown in Figure 1 for percent defective, and Figure 2 for defects per hundred units.

b. Detailed instructions for preparation of AMC Form 1187 are as follows:

- (1) Space 1. Enter nomenclature of end item being produced.
- (2) Space 2. Enter name of manufacturer. When the manufacturer is a subsupplier, enter the prime supplier's name beneath, identifying both as either "prime" or "sub."
- (3) Space 3. Enter number of the prime contract, purchase order or work order, placed with the prime supplier.
- (4) Space 4. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (5) Space 5. Enter name of supplier where sampling inspection was conducted, if different from the prime supplier.
- (6) Space 6. Enter number of contract, purchase order or work order placed with the subsupplier.
- (7) Space 7. Enter identification of the quality assurance verification area.
- (8) Space 8. Enter name of prime inspection office administering the prime contract or charged with the inspection responsibility.
- (9) Space 9. Enter name of the subinspection office cognizant of the contract or order on which sampling inspection procedures have been applied at a subsupplier's plant.
- (10) Space 10. Enter title of each class of defect contained in the proce-

dures under which the sampling inspection was conducted, i.e., critical, major or minor, or Group A, B or C.

- (11) Space 11. Indicate the sampling table and procedure being used. For example, when MIL-STD-105 is used, the following coding may be used:

<u>Inspection Degree</u>	<u>Inspection Level</u>	<u>Sampling Plan</u>
Normal ----- N	I (or) S1	Single ----- S
Tightened ----- T	II S2	Double ----- D
Reduced ----- R	III S3	Multiple --- M
	S4	
Minimum-Step One --- R (1/5)		
Minimum-Step Two --- R (1/10)		

Example: Normal inspection, Level II, single sampling, is indicated by the code, "105 N II S."

- (12) Space 12. Enter proper digits in heading to indicate the calendar year inspection was performed. Enter in the column the day and month on which inspection of the sample was completed.

- (13) Space 13. Enter quantity of units of product in the inspection lot.

- (14) Space 14 a. Enter applicable part or drawing number.

Space 14 b. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.

- (15) Space 15. Enter number assigned to the inspection lot. Resubmitted lots should be identified by using the original lot number followed by "A" the first time a lot is resubmitted, "B" the second time, etc.

- (16) Space 16. Enter applicable acceptable quality level (AQL) used for each verification by class.

- (17) Space 17. Enter number of units of product included in the first sample for each class of defects. If double or multiple sampling plans are used the number included in the first sample and the cumulative quantity in all samples inspected will be entered in the columns headed "1st" and "Cum," respectively.

- (18) Space 18. Enter total number of defects or defective units of product for each class. If double or multiple sampling plans are used, the

number in the first sample and the cumulative number found in all samples inspected will be entered in the columns headed "1st" and "Cum," respectively.

- (19) Space 19. Enter check mark to indicate whether the lot was accepted or rejected.
- (20) Space 20. Enter AMC Form 1187 number. AMC Forms 1187 will be numbered consecutively.
- (21) Space 21. Enter signature of the QAREp submitting the AMC Form 1187.
- (22) Space 22.
 - (a) When characteristics are classified and coded in section 4 of the specification or other procurement document, indicate by class the coded number assigned to the defective characteristic.
 - (b) When characteristics are not classified by the procurement document:
 - 1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.
 - 2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.
 - (c) The defective characteristic number will be entered in space 22. If the characteristic is defective on five units, the coded number would be followed by quantity of defectives as a superscript, e.g., 212⁵.
- (23) Space 23. Enter totals of the respective columns, excluding resubmitted lots.

- (24) Space 24. Enter sums of previous reports and include the current report covering the same unit or homogeneous group.
- (25) Space 25. When a lot is rejected during product verification, enter the same lot number as indicated in space 15.
- (26) Space 26. Enter AMC Form 1176, Corrective Action Record, number.
- (27) Space 27. Enter any pertinent remarks relative to the product verification.

Note. If process averages are to be computed, the following spaces will be used:

- (28) Space 28. For process average data, enter the applicable class, e.g., critical, major or minor, or Group A, B or C, in spaces 28 a, b or c.
- (29) Space 29. Enter date process average was computed for each class.
- (30) Space 30. Enter number of lots used in computing process average for the class.
- (31) Space 31 a. Enter total of units or samples used in computing process average for the class.

Space 31 b. Enter total number of defects or defectives used in computing process average for the class.
- (32) Space 32. Enter process average for defects per hundred or percent defective for each class of defect.

AMC FORM 1187
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Figure 2, Back

CHAPTER 17
WORKSHEET FOR ATTRIBUTES INSPECTION - AQL PER CHARACTERISTIC

5-17-000. Application. This chapter is applicable when preparing an AMC Form 1188, Worksheet for Attributes Inspection - AQL per Characteristic.

5-17-001. Instructions for completion. a. An example of a completed AMC Form 1188 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1188 are as follows:

- (1) Space 1. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (2) Space 2. Enter name of supplier.
- (3) Space 3. Enter identification of the quality assurance verification area where the inspection was accomplished.
- (4) Space 4. Enter date product verification was performed.
- (5) Space 5. Enter applicable part or drawing number.
- (6) Space 6. Enter applicable revision or engineering change order number.
- (7) Space 7. Enter nomenclature of the part.
- (8) Space 8. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (9) Space 9. Enter number assigned to the inspection lot. Resubmitted lots should be identified by using the original lot number, followed by "A" the first time a lot is resubmitted, "B" the second time, etc.
- (10) Space 10. Enter quantity of units of product in the inspection lot.
- (11) Space 11. Enter specification number and revision pertaining to the part.
- (12) Space 12. Enter name of the responsible inspection element.

(13) Space 13. Enter total number of defective units returned to the supplier.

(14) Space 14. Enter "X" in the appropriate square if lot was accepted or rejected.

(15) Space 15. Enter signature of the QAREp performing the inspection.

(16) Space 16.

(a) When characteristics are classified and coded in section 4 of the specification or the procurement document, indicate by class the coded number assigned to the defective characteristic.

(b) When characteristics are not classified by the procurement document:

1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.

2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.

(c) The defective characteristic number will be entered in this space.

(17) Space 17. Enter a brief description of the defect, e.g., thread under-size, hole elongated, etc.

(18) Space 18. Enter applicable acceptable quality level (AQL) used for each characteristic.

(19) Space 19 a. Enter designation indicating tables being used, such as "105" for MIL-STD-105.

Space 19 b. Indicate sampling procedure being used for each characteristic found defective. For example, when MIL-STD-105 is used, the following coding may be used:

<u>Inspection Degree</u>	<u>Inspection Level</u>	<u>Sampling Plan</u>
Normal ----- N	I (or) S1	Single ---- S
Tightened ----- T	II S2	Double --- D
Reduced ----- R	III S3	Multiple -- M
	S4	
Minimum-Step One --- R (1/5)		
Minimum-Step Two --- R (1/10)		

Example: Normal inspection, Level II, single sampling, is indicated by the code, "N II S."

- (20) Space 20. Under "1st" enter the number of units of product included in the first sample for each characteristic observed. When a subsequent sample is selected, enter under "Cum" the total number of units actually inspected in the cumulated sample.
- (21) Space 21. Enter acceptance and rejection numbers for the first sample on the top portion of the space. If a subsequent sample is selected, enter acceptance and rejection numbers for the cumulative sample in the bottom portion of the space.
- (22) Space 22. Enter number of units containing defects in the first sample under "1st." If a subsequent sample is drawn, enter total defectives for the cumulated samples under "Cum."
- (23) Space 23. Indicate by check mark whether the material being inspected was accepted or rejected for that characteristic.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 18
SUMMARY RECORD ATTRIBUTES INSPECTION - AQL PER CHARACTERISTIC

5-18-000. Application. This chapter is applicable when preparing an AMC Form 1189, Summary Record Attributes Inspection - AQL per Characteristic.

5-18-001. Instructions for completion. a. An example of a completed AMC Form 1189 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1189 are as follows:

- (1) Space 1. Enter number of the plan in use, as contained in the title of Part Two, Chapter 1, 2, 3, 4, etc.
- (2) Space 2. Enter nomenclature of end item being produced.
- (3) Space 3. Enter name of prime supplier.
- (4) Space 4. Enter name of manufacturer when other than the prime supplier.
- (5) Space 5. Enter identification of the quality assurance verification area.
- (6) Space 6. Enter applicable part or drawing number.
- (7) Space 7. Enter revision or engineering change order number.
- (8) Space 8. Enter nomenclature of the part.
- (9) Space 9. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (10) Space 10. Enter number of the prime contract, purchase order or work order placed with the prime supplier.
- (11) Space 11. Enter number of the contract, purchase order or work order placed with the subsupplier.
- (12) Space 12. Enter name of prime inspection office administering the prime contract or charged with the inspection responsibility.

- (13) Space 13. Enter name of the subinspection office cognizant of the contract or order on which sampling inspection procedures have been applied at a subsupplier's plant.
- (14) Space 14. Enter AMC Form 1189 number. AMC Forms 1189 will be numbered consecutively for each unit of product inspected on each contract or order.
- (15) Space 15. Enter signature of the QARep submitting the AMC Form 1189.
- (16) Space 16. Enter proper digits in heading to indicate the calendar year inspection was performed. Enter in the column the day and month on which inspection of the sample was completed.
- (17) Space 17. Enter quantity of units of product in the inspection lot.
- (18) Space 18. Enter number assigned to the inspection lot. Resubmitted lots should be identified by using the original lot number, followed by "A" the first time a lot is resubmitted, "B" the second time, etc.
- (19) Space 19 a. Enter designation indicating tables being used, such as "105" for MIL-STD-105.

Space 19 b. Indicate sampling procedure being used for each characteristic found defective. For example, when MIL-STD-105 is used, the following coding may be used:

<u>Inspection Degree</u>	<u>Inspection Level</u>	<u>Sampling Plan</u>
Normal ----- N	I (or) S1	Single ----- S
Tightened ----- T	II S2	Double ----- D
Reduced ----- R	III S3	Multiple ---- M
	S4	
Minimum-Step One --- R (1/5)		
Minimum-Step Two --- R (1/10)		

Example: Normal inspection, Level II, single sample, is indicated by the code, "N II S."

- (20) Space 20. Enter sample size. When double or multiple sampling is performed, enter cumulative sample size. Additional lines are provided to permit entry of varying sample sizes for each lot, i.e., normal, reduced or tightened.
- (21) Space 21. Enter acceptable quality level (AQL) for each defect to be

listed in first sample and cumulative sample.

(22) Space 22.

- (a) When characteristics are classified and coded in section 4 of the specification or procurement document, indicate by class the coded number assigned to the defective characteristic.
- (b) When characteristics are not classified by the procurement document:
 1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.

2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.

- (c) The defective characteristic number will be entered in this space for the first and cumulative samples.
- (23) Space 23. Check appropriate column to indicate whether the lot was accepted or rejected.
- (24) Space 24. Enter totals of the respective columns, excluding resubmitted lots.
- (25) Space 25. When a lot is rejected during product verification, enter the same lot number as indicated in space 18.
- (26) Space 26. Enter AMC Form 1176, Corrective Action Record, number.
- (27) Space 27. Enter any pertinent remarks relative to the product verification. Also, when the degree of inspection changes for any individual characteristic, record each by code number and indicate lot number on which new degree will be implemented. This information will be transferred to all additional AMC Forms 1189 used.

Note. If process averages are to be computed, the following spaces will be utilized:

- (28) Space 28. Enter date process average was computed for each AQL.
- (29) Space 29. Enter defect number or code number of defective found during product verification.
- (30) Space 30. Enter AQL for the defective characteristic.
- (31) Space 31. Enter number of lots included in the process average for the specified AQL.
- (32) Space 32 a. Enter total of units of samples used in computing process average for each defective characteristic.
- Space 32 b. Enter total number of defects used in computing process average for each characteristic.
- (33) Space 33. Enter process average results for each defective characteristic.

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PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 19
WORKSHEET FOR VARIABLES INSPECTION

5-19-000. Application. This chapter is applicable when preparing an AMC Form 1190, Worksheet for Variables Inspection.

5-19-001. Instructions for completion. a. An example of a completed AMC Form 1190 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1190 are as follows:

- (1) Space 1. Enter name of supplier.
- (2) Space 2. Enter nomenclature of the part.
- (3) Space 3. Enter date product verification inspection was performed.
- (4) Space 4. Enter contract, purchase order or work order number. When not limited to one, insert "various."
- (5) Space 5. Enter applicable part or drawing number and revision.
- (6) Space 6. Only one characteristic may be considered on a single AMC Form 1190. Enter number of the characteristic being considered, as follows:
 - (a) When characteristics are classified and coded in section 4 of the specification or other procurement document, indicate by class the coded number assigned to the characteristic.
 - (b) When characteristics are not classified by the procurement document:
 1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.
 2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.

- (c) When inspection of a characteristic is required by a paragraph in a specification, enter the paragraph number.
- (7) Space 7. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (8) Space 8. Enter identification of the quality assurance verification area.
- (9) Space 9. Enter number assigned to the inspection lot or production interval. Resubmitted lots should be identified by using the original lot number, followed by "A" the first time a lot is resubmitted, "B" the second time, etc.
- (10) Space 10. Enter method of calculation used. The letter and number designation assigned to examples in MIL-STD-414 may be used as a code, e.g., B-1, C-3, D-2, etc.
- (11) Space 11. Enter quantity of units of product in the inspection lot or production interval.
- (12) Space 12. Enter acceptable quality level or levels (AQL) for the characteristic being inspected in the appropriate space.
- (13) Space 13. Enter degree and level of inspection being performed, using the following coding:

<u>Inspection Degree</u>	<u>Inspection Level</u>
Normal ----- N	I
Tightened ----- T	II
Reduced ----- R	III
Minimum-Step One --- R (1/5)	IV
Minimum-Step Two --- R (1/10)	V

- (14) Space 14. Enter upper specification limit for the characteristic being inspected.
- (15) Space 15. Enter lower specification limit for the characteristic being inspected.

- (16) Spaces 16 through 20. Enter values from the appropriate tables in the spaces provided, necessary for the method of calculation being used.
- (17) Space 21. When using known variability methods, enter predetermined variability of the quality characteristic.
- (18) Space 22. Record individual measurements in the order inspected.
- (19) Space 23.
 - (a) For variability unknown, standard deviation method, enter squares of the individual measurements.
 - (b) For variability unknown, range method, enter difference between the highest and lowest individual measurements for each group of five. (See par. C3.2 or C11.2 of MIL-STD-414.)
- (20) Spaces 24 through 39. Enter results of calculations performed, as required, for the method of calculation being used.
- (21) Space 40. Enter any remarks pertinent to product verification, including identification number of any AMC Forms 1176, Corrective Action Record, issued.
- (22) Space 41. Enter "X" in the appropriate square.
- (23) Space 42. Enter signature of the QAREp performing the inspection.

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PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 20
SUMMARY RECORD FOR VARIABLES INSPECTION

5-20-000. Application. This chapter is applicable when preparing an AMC Form 1191, Summary Record for Variables Inspection.

5-20-001. Instructions for completion. a. An example of a completed AMC Form 1191 is shown in Figure 1.

b. Detailed instructions for preparation of AMC Form 1191 are as follows:

- (1) Space 1. Enter name of manufacturer. When the manufacturer is a subsupplier, enter prime supplier's name beneath, identifying both as either "prime" or "sub."
- (2) Space 2. Enter contract, purchase order or work order number. When not limited to one, insert "various."
- (3) Space 3. Enter name of responsible inspection element.
- (4) Space 4. Enter dates of reporting period.
- (5) Space 5. Enter method of calculation used. The letter and number designation assigned to examples in MIL-STD-414 may be used as a code, e.g., B-1, C-3, D-2, etc.
- (6) Space 6. Enter identification of the quality assurance verification area.
- (7) Space 7. Enter identification code of the characteristic being summarized. When items are grouped, enter name of test or inspection performed, e.g., Rockwell hardness, electrical resistance, etc.
- (8) Space 8. Enter signature of the QAREp submitting AMC Form 1191.
- (9) Space 9. Enter proper digits in heading to indicate calendar year. Enter date product verification inspection was performed.
- (10) Space 10. Enter number assigned to the lot or production interval.
- (11) Space 11 a. Enter part or drawing number.

Space 11 b. Enter source of inspection provisions or criteria, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.

(12) Space 12. Enter quantity of units of product in the inspection lot.

(13) Space 13. Enter degree and level of inspection performed on the inspection lot. The following coding will be used:

<u>Inspection Degree</u>	<u>Inspection Level</u>
Normal ----- N	I
Tightened ----- T	II
Reduced ----- R	III
Minimum-Step One --- R (1/5)	IV
Minimum-Step Two --- R (1/10)	V

(14) Space 14. Enter quantity of units of product in the verification sample.

(15) Space 15. Enter acceptable quality level or levels (AQL) as required by the method of calculation being used.

(16) Space 16. Enter appropriate estimates of lot percent defective computed for the AQL or AQL's in space 15.

(17) Space 17. Enter check mark or "X" to indicate disposition of the lot or production interval.

(18) Space 18. Enter any remarks pertinent to product verification, including identification number of any AMC Forms 1176, Corrective Action Record, issued.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 21
WORKSHEET FOR CONTINUOUS SAMPLING INSPECTION

5-21-000. Application. This chapter is applicable when preparing an AMC Form 1192, Worksheet for Continuous Sampling Inspection.

5-21-001. Instructions for completion. a. An example of a completed AMC Form 1192 is shown in Figure 1.

b. Detailed instructions for completion of AMC Form 1192 are as follows:

- (1) Space 1. Enter nomenclature of the part.
- (2) Space 2. Enter part number or drawing number and revision.
- (3) Space 3. Enter date product verification was performed.
- (4) Space 4. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (5) Space 5. Enter number assigned to the production interval. Resubmitted material should be identified by the original number, followed by "A" indicating the first resubmission, "B" the second, etc.
- (6) Space 6. Enter plan designation and inspection level being used, as follows:
 - (a) For CSP Plans 1, 2 and A, enter CSP-1, CSP-2 or CSP-A, followed in parentheses by the level, I, II or III. When a level is not specified in the procurement document, Level II will be used in accordance with paragraph 7.2 of MIL-STD-1235.

Example: Plan CSP-2, Level III would be indicated, CSP-2 (III).

- (b) For CSP-M plans enter the plan designation, followed in parentheses by K1 through K5, as determined from Tables VIII or XI of MIL-STD-1235.

Example: Plan CSP-M, Level K3 would be indicated, CSP-M (K3).

- (7) Space 7. Enter inspection degree and frequency being used for each class of defect being considered. The following coding will be used:

- (a) For CSP-1, 2 and A plans:

<u>Inspection Degree</u>	<u>Frequency</u>
Normal ----- (N)	f = followed by sample frequency from appropriate table.
Phase 1 ----- (Ph 1)	f/5 followed by 1/5 of sampling frequency listed in appropriate table.
Phase 2 ----- (Ph 2)	
Phase 3 ----- (Ph 3)	

Example: A sampling procedure with a frequency of 1/10 would be indicated as follows:

Normal product verification (N) $f = 1/10$
 Phase 1 minimum product verification (Ph 1) $f/5 = 1/50$
 Phase 2 minimum product verification (Ph 2) $f/5 = 1/50$
 Phase 3 minimum product verification (Ph 3) $f/5 = 1/50$

- (b) For CSP-M plans the code for inspection degree in (7) (a) above, will be used followed by $k = 1/2$ or $1/3$ for normal product verification inspection or by $k/5 = 1/10$ or $1/15$ for minimum product verification inspection.

Example: A CSP-M sampling procedure with a frequency of $1/2$ would be indicated as follows:

Normal product verification (N) $k = 1/2$
 Phase 1 minimum product verification (Ph 1) $k/5 = 1/10$
 Phase 2 minimum product verification (Ph 2) $k/5 = 1/10$
 Phase 3 minimum product verification (Ph 3) $k/5 = 1/10$

- (8) Space 8. Enter appropriate AQL for each class of defects being inspected from inspection document referenced in space 4. When a separate AQL for each defect is specified, use additional AMC Forms 1192, as required. Two AQL's may be recorded on each AMC Form 1192.
- (9) Space 9. Enter identification of the quality assurance verification station where inspection is to be accomplished.
- (10) Space 10. When inspection is accomplished on a sample, the following indications will be made in the tally blocks:

- (a) When no defects are found, an "X" will be placed in appropriate tally block.
 - (b) When a defect is found, a circle will be placed in appropriate tally block.
- (11) Space 11. Enter tally number from space 10 when a defect is found.
- (12) Space 12. Enter defect characteristic number or code in accordance with the following instructions:
- (a) When characteristics are classified and coded in section 4 of the specification or other procurement document, indicate by class the coded number assigned to the defect or characteristic.
 - (b) When characteristics are not classified by the procurement document:
 - 1. The defect will be classified in accordance with definitions of classes of defects, MIL-STD-109, Quality Assurance Terms and Definitions.
 - 2. Each characteristic for the part inspected is identified by a number, space 9 of AMC Form 1181, Verification Check List. The defective characteristic number will be coded, using three digits, as follows:

Critical Defect. Precede assigned number with 0, e.g., if characteristic 04 was defective, the coded number would be 004.

Major Defect. Precede assigned number with 1, e.g., if characteristic 12 was defective, the coded number would be 112.

Minor Defect. Precede assigned number with 2, e.g., if characteristic 18 was defective, the coded number would be 218.
- (13) Space 13. Indicate status of supplier's inspection effort when defect was found. The following coding will be used:
- (a) To indicate 100% or screening inspection, enter the letter "Q" (qualification period).
 - (b) To indicate sampling inspection, enter the letter "S." For CSP-M plans only, the letter "S" will be followed by numbers 1 through 5, indicating level of sampling inspection in effect.
- (14) Space 14. When a defect is found and the verification procedure in effect requires a specific number of consecutive units or samples be

cleared prior to making a determination, the following entries will be made:

- (a) Space 14 a. Enter number of units or samples required to clear, as specified by the verification procedure.
- (b) Space 14 b. Enter number of units or samples on which inspection has been completed when:
 - 1. The required units or samples are found free of defects.
 - 2. A second defect is found requiring a change in inspection frequency or the issuance of an AMC Form 1176, Corrective Action Record.
 - 3. The working shift ends.
- (c) Space 14 c.
 - 1. When the situation in (b) 1 or 2 above occur, enter "O" in this space.
 - 2. When the working shift ends, enter difference between 14 a and 14 b. This number will be posted in column 14 a of the AMC Form 1192 for the following production interval and inspection continued for this defect until the required determination can be made.
- (15) Space 15. Enter any remarks relative to product verification or material disposition. When an AMC Form 1176 is issued, enter the number of the AMC Form 1176.
- (16) Space 16. Enter total number of units presented for inspection.
- (17) Space 17. Enter number of units or samples inspected for each AQL.
- (18) Space 18. Enter total number of defects found for each AQL.
- (19) Space 19. Enter signature of the QARep preparing the AMC Form 1192.

WORKSHEET FOR CONTINUOUS SAMPLING INSPECTION (AMCR 715-509)																																																																																																																																																																																																																																																																																																									
1. NOMENCLATURE Valve, Exhaust														2. PART OR DRAWING NO. 8741362										3. DATE 1 Nov 63																																																																																																																																																																																																																																																																																	
4. SOURCE OF INSPECTION PROVISIONS OR CRITERIA SOAP, 8741362														5. PRODUCTION INTERVAL IDENTIFICATION 63-125																																																																																																																																																																																																																																																																																											
6. PLAN AND LEVEL CSP-2 (II)							7. DEGREE AND FREQUENCY MAJ (N) $f=1/10$ MIN (N) $f=1/10$							8. AQL MAJ 2.5 MIN 4.0							9. QA VERIFICATION STATION Mach. Shop Station #2																																																																																																																																																																																																																																																																																				
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16. PRODUCTION INTERVAL SIZE 1000						17. TOTAL SAMPLES MAJ. 100 MIN. 100						18. TOTAL DEFECTS MAJ. 2 MIN. 2						19. Q.A. REPRESENTATIVE <i>C. A. Glotz</i> C. A. Glotz																																																																																																																																																																																																																																																																																							

ANC FORM 2 JAN 64 1192

Figure 1.

PART FIVE
VERIFICATION RECORDING INSTRUCTIONS

CHAPTER 22
SUMMARY RECORD FOR CONTINUOUS SAMPLING INSPECTION

5-22-000. Application. This chapter is applicable when preparing an AMC Form 1193, Summary Record for Continuous Sampling Inspection.

5-22-001. Instructions for completion. a. An example of a completed AMC Form 1193 is shown in Figure 1.

b. When more than one class of defect or individual characteristic is being recorded on AMC Form 1193, only one entry will be made in columns 13, 14 and 15 for each production interval. However, if the degree and frequency of product verification inspection varies between classes of defect or individual characteristics, separate single line entries will be required in columns 16, 17, 18 and 19.

c. Detailed instructions for completion of AMC Form 1193 are as follows:

- (1) Space 1. Enter name of supplier. When supplier is the subsupplier, enter prime supplier's name beneath.
- (2) Space 2. Enter nomenclature of the part.
- (3) Space 3. Enter dates of reporting period.
- (4) Space 4. Enter contract, purchase order or work order number.
- (5) Space 5. Enter part or drawing number and revision.
- (6) Space 6. Enter identification of the quality assurance verification area.
- (7) Space 7. Enter source of inspection provisions, e.g., specification, SQAP, supplier's inspection check list, drawing, etc.
- (8) Space 8. Enter appropriate AQL for characteristics being inspected from the inspection document referenced in space 7. When a separate AQL for each defect is specified, enter "see space 19."
- (9) Space 9. Enter AMC Form 1193 number. AMC Forms 1193 will be numbered consecutively.

- (11) Space 11. Enter name of responsible inspection element.
- (12) Space 12. Enter signature of the QAREp submitting AMC Form 1193.
- (13) Space 13. Enter proper digits in heading to indicate calendar year.
Enter date product verification inspection was performed.
- (14) Space 14. Enter number assigned to the production interval.
- (15) Space 15. Enter number of units presented for inspection.
- (16) Space 16. Enter degree and frequency of product verification inspection performed. When more than one degree and frequency are used, make single line entries for each.
- (17) Space 17. Enter number of units or samples inspected for each degree and frequency recorded in space 16. Only the largest number of units inspected in each production interval will be included in the total in space 20. All other entries for that production interval will be inclosed in parentheses and excluded from the total.
- (18) Space 18. Enter number of defects found.
- (19) Space 19. Enter any pertinent remarks relative to product verification, including the following:
- (a) Enter defect or characteristic numbers, and as a superscript, indicate number of times each defect was observed, e.g., 208¹, 104², etc.
 - (b) Enter number of any AMC Forms 1176, Corrective Action Record, issued during the production interval.
 - (c) When defects are found on more than two characteristics or classes of defects and single line entries are made in accordance with b above, enter appropriate AQL for each characteristic or class being recorded.
- (20) Space 20. Enter totals of columns 15, 17 and 18, excluding information for resubmitted lots and quantities in space 17, inclosed in parentheses. When more detailed classification is required, totals for each characteristic or class of defect may be recorded on the blank reverse side of AMC Form 1193.

SUMMARY RECORD FOR CONTINUOUS SAMPLING INSPECTION (AMCR 715-509)						
1. SUPPLIER F G C Motor Company			2. NOMENCLATURE Valve, Exhaust		3. REPORTING PERIOD 1 Nov thru 1 Dec	
4. CONTRACT NUMBER DA-20-018-AMC-43210(T)			5. PART OR DRAWING NO. 8741362 Rev. B		6. QA VERIFICATION STATION Mach. Shop Station #2	
7. SOURCE OF INSPECTION PROVISIONS OR CRITERIA SQAP 8741362			8. AQL MAJ. 2.5 MIN. 4.0		9. RECORD NUMBER MS 2-1	
10. PLAN AND LEVEL CSP-2 (II)			11. INSPECTION ELEMENT Chicago Procurement Dist.		12. PREPARED BY <i>C.A. Glotz</i> C. A. Glotz	
13. DATE 19 <u>63</u>	14. PRODUCTION INTERVAL IDENT	15. PRODUCTION INTERVAL SIZE	16. DEGREE AND FREQUENCY	17. NUMBER OF UNITS INSPECTED	18. NO. OF DEF.	19. REMARKS
11/1	63-125	1000	(N) f=1/10	100	4	107 ² , 212 ¹ , 217 ¹ , CAR P-7 issued.
11/4	63-126	1000	(N) f=1/10	100	1	215 ¹
11/5	63-127	1000	(N) f=1/10	100	2	216 ² (Separated by 60 samples)
11/6	63-128	1000	(N) f=1/10	100	1	109 ¹
11/7	63-129	1000	(N) f=1/10	100	0	
11/8	63-130	1000	(N) f=1/10	100	1	215 ¹
11/12	63-131	1000	(N) f=1/10	100	0	
11/13	63-132	1000	(N) f=1/10	100	0	
11/14	63-133	1000	(N) f=1/10	100	1	212 ¹
11/15	63-134	1000	(N) f=1/10	100	0	
11/18	63-135	1000	(N) f=1/10	100	1	112 ¹
			(PH 1)f/S=1/50	(20)	0	Frequency reduced on Minor Characteristic
11/19	63-136	1000	(PH 1)f/S=1/50	20	0	Frequency reduced on Major Characteristic
20. TOTALS		12,000		1120	11	

AMC FORM 2 JAN 64 1193

Figure 1.

5-22-002

